IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1960.

No. .....

CENTRAL ILLINOIS PUBLIC SERVICE COMPANY,
Appellant,

vs.

ILLINOIS COMMERCE COMMISSION ex rel. ILLINOIS CENTRAL RAILROAD COMPANY,
Appellees.

Appeal from the Supreme Court of the State of Illinois.

JURISDICTIONAL STATEMENT.

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JURISDICTIONAL STATEMENT.

OPINIONS AND ORDERS BELOW.

The opinion of the Supreme Court of the State of Illinois is reported in 18 Ill. 2d 506 and 165 N. E. 2d 322 (1960). A copy of that opinion is attached hereto as Appendix "A". A copy of the judgment of the Supreme Court of

the State of Illinois appealed from is attached hereto as Appendix "B". Copy of the Order of the Supreme Court of the State of Illinois denying Appellant's Petition for Rehearing is attached hereto as Appendix "C". The Circuit Court of Shelby County rendered no opinion in this case. A copy of the final order of said Circuit Court entered on February 24, 1958, is attached hereto as Appendix "D". The Illinois Commerce Commission entered three orders in this case.

The first of said orders was entered on March 9, 1954, a copy of which is attached hereto as Appendix "E", the second of said orders was entered on October 26, 1954, a copy of which is attached hereto as Appendix "F", and the third and final order was entered on March 8, 1955, a copy of which is attached hereto as Appendix "G".

JURISDICTIONAL GROUNDS

This is an appeal from a judgment of the Supreme Court of the State of Illinois. Illinois Central Railroad Company (Illinois Central), one of Appellees, instituted this cause by filing a complaint with the Illinois Commerce Commission (Illinois Commission), alleging that its automatic train stop system between Champaign, Illinois and Branch Junction, Illinois, was installed and operated pursuant to an order of the Interstate Commerce Commission and that current from Appellant's power lines has escaped and caused false signals to appear in said automatic train stop system. The prayer of the complaint was that the Illinois Commission require Appellant to make such additions to or changes in its plant as may be necessary to correct the interference with said automatic train stop system.

The Illinois Commission on March 9, 1954, after Illinois Central and Appellant had completed, in the main, their

direct evidence, ordered Illinois Central to forthwith take immediate steps to change its automatic train stop system to operate at 100 cycles in place of 60 cycles per second. On October 26, 1954, the Illinois Commission entered its second order repeating its direction to the Illinois Central to change as aforesaid its automatic train stop system, directing Appellant to supply current to Illinois Central at a frequency of 100 cycles per second and providing that in the event of the inability of Illinois Central and Appellant to agree on the apportionment of the costs of changing said automatic train stop system a further hearing to apportion said costs would be held. The Illinois Commission on March 8, 1955, entered its final order requiring the changing of said automatic train stop system as above stated, with current therefor to be supplied by Appellant at 60 cycles per second and directing that the cost of such change, estimated at $147,347, be borne fifty per cent by Illinois Central and fifty per cent by Appellant.

The Circuit Court of Shelby County held that the final order and decision of the Illinois Commission entered on March 8, 1955, was without the jurisdiction of said Illinois Commission and set aside said order. The Supreme Court of the State of Illinois reversed the judgment of the Circuit Court of Shelby County and confirmed said orders of the Illinois Commission.

Appellant contended below and contends before this Court that said orders of the Illinois Commission are invalid and void as invading a field occupied and preempted by the enactment of Section 26 of the Interstate Commerce Act, 49 U. S. C., § 26 (renumbered Section 25 by Act of September 18, 1940), and by the orders of the Interstate Commerce Commission issued pursuant thereto, and as taking Appellant's property without due process of law in violation of the Fourteenth Amendment to the United States Constitution.

The judgment of the Supreme Court of the State of Illinois, dated and entered January 22, 1960, became final upon the entry of an order by said Court on March 28, 1960, denying Appellant's petition for a rehearing. A notice of appeal to this Court was filed by Appellant with the Clerk of the Supreme Court of the State of Illinois (the Court possessed of the record) on June 24, 1960.

The jurisdiction of this Court upon appeal is conferred by 28 U. S. C., Section 1257 (2). Appellant challenges the validity of the orders of the Illinois Commerce Commission, "statutes of the State" within the meaning of 28 U. S. C., Section 1257 (2), as being repugnant to the Constitution and laws of the United States, and the decision of the highest State Court to which appeal could have been taken was in favor of the validity of said orders.

The following decisions are believed to sustain the jurisdiction of this Court on appeal:

Atchison, Topeka & S. F. R. Co. v. Public Utilities Commission, 346 U. S. 346, 348, 98 L. ed. 51, 57, 58, 74 S. Ct. 92 (1953);

King Mfg. Co. v. Augusta, 277 U. S. 100, 72 L. ed. 801, 48 S. Ct. 489 (1928);

Live Oak Water Users' Association v. Railroad Commission, 269 U. S. 354, 356, 70 L. ed. 305, 308, 46 S. Ct. 149 (1926);

Lake Erie & W. R. Co. v. State Public Utilities Commission, 249 U. S. 422, 424, 63 L. ed. 684, 687, 39 S. Ct. 459 (1919).

QUESTIONS PRESENTED.

1. Where Congress by Section 26 of the Interstate Commerce Act, 49 U. S. C., § 26 (renumbered Section 25 by Act of September 18, 1940) has authorized the Interstate

Commerce Commission to order any carrier by railroad to install automatic train stop devices and to inspect and test such devices to determine whether they are in proper condition to operate and provide adequate safety, and has made it the duty of the Interstate Commerce Commission to see that the requirements of said Section and the orders, rules, regulations, standards and instructions made, prescribed or approved thereunder, are observed, and has required that any such carrier report to the Interstate Commerce Commission failures of such devices to indicate or function as intended, and has made it unlawful for any such carrier to use on its line any device covered by said Section unless such device is in proper condition and safe to operate and has been inspected from time to time in accordance with the provisions of said Section and has otherwise provided for regulation of such devices, and where Illinois Central Railroad Company (Illinois Central), pursuant to orders of the Interstate Commerce Commission, installed a 60 cycle automatic train stop system on that part of its line between Champaign, Illinois, and Branch Junction, Illinois, and has continued to operate such system, are the orders of the Illinois Commerce Commission requiring Illinois Central to substitute for its said 60 cycle automatic train stop system a 100 cycle system and apportioning between Illinois Central and Appellant the cost of making such substitution invalid and void (a) as attempted regulation in a field occupied and preempted by the enactment of said Section 26 and by the actions of the Interstate Commerce Commission pursuant thereto, and (b) as being in conflict with said Section 26 and with the lawful orders, rules, regulations, standards and instructions made, prescribed or approved by the Interstate Commerce Commission pursuant thereto?

2. Do the orders of the Illinois Commission, requiring Illinois Central to substitute for its 60 cycle automatic

train stop system a 100 cycle system and apportioning the cost of such substitution one-half to Illinois Central and one-half to Appellant, deprive Appellant of its property without due process of law in violation of the Fourteenth Amendment to the Constitution of the United States because (1) they take Appellant's property for a use not benefiting Appellant and without a finding of any wrongful act on the part of Appellant, and (2), the Illinois Commission having no power to order changes in the automatic train stop system, they take Appellant's property for the private purpose of paying for such substitution made voluntarily by Illinois Central?

STATEMENT OF THE CASE.

Congress on June 30, 1906, by joint resolution directed the Interstate Commerce Commission to "investigate and report on the use of and necessity for block signal systems and appliances for the automatic control of railway trains in the United States" (45 U. S. C., § 35). Pursuant to this joint resolution the Interstate Commerce Commission conducted investigations from 1906 to 1920 and reported its conclusions from time to time to Congress. As a result Section 26 of the Interstate Commerce Act was included in the Transportation Act of February 28, 1920. A copy of Section 26 as then enacted is attached hereto as Appendix "H".

The Interstate Commerce Commission, pursuant to the power granted it by Section 26, on June 13, 1922, ordered 49 railroads including the Illinois Central to install on or before January 1, 1925, an automatic train stop or train control device or devices which would comply with the specifications and requirements set forth in the appendix to the order, each railroad being required to install such device or devices upon at least one full passenger loco-

motive division (69 I. C. C. 258). The Interstate Commerce Commission modified its order of June 13, 1922, in certain respects by its report of July 18, 1924 (91 I. C. C. 426). One of the changes was to allow the inclusion, at the option of the railroad, of equipment which would permit the engineman to prevent an automatic application of the brakes. Illinois Central pursuant to the order of June 13, 1922, as amended, on January 21, 1926, placed in operation an automatic train stop system on that part of its line between Champaign, Illinois, and Branch Junction, Illinois, a distance of 121.8 miles.

Prior to 1924, Appellant had electric transmission and distribution lines on its right of way near to and parallel with the right of way of Illinois Central for 58 of the 121.8 miles between Champaign and Branch Junction, and these transmission and distribution lines have been in continuous operation since that time (Abst. p. 125). Since their construction these lines have been transmitting electric energy at a frequency of 60 cycles, which is the standard frequency for the overwhelming majority of all electric light and power systems in this country (Abst. p. 125). Sixty cycles has been the established power frequency in the Champaign-Branch Junction area at least since 1913 (Abst. p. 121).

Appellant's power lines parallelling Illinois Central's tracks have been extended and the quantity of electric energy transmitted over said lines has increased since 1924. Appellant's said lines are well constructed and maintained in general conformity with recognized requirements (Abst. p. 239, Appx. "F", p. 45a; Addnl. Abst. pp. 14, 15).

The apparatus used in the automatic train stop system is divided into two general classifications, wayside equipment and locomotive equipment (Abst. p. 39) The wayside

equipment includes the track rails which are utilized to carry direct electric current to operate the track circuit and alternating current to activate the locomotive equipment. The alternating current is controlled by relays operated by the direct current track circuit. The locomotive equipment includes receiver coils attached to the locomotive between 6 and 9 inches above each rail. The alternating current flowing in the rails creates a magnetic field around each rail which pulsates at 60 cycles per second when 60 cycle current is used. This magnetic field induces an electric current in the receiver coils on the locomotive (Abst. p. 101). There is no direct contact between the receiver coils and the rails. The current induced in the receiver coils operates a relay in the locomotive which in turn maintains a green light in the locomotive (Abst. p. 42). A broken rail or a train ahead shuts off the direct current in the rails, which in turn operates a relay that shuts off the alternating current. When the alternating current is shut off, the green light in the locomotive changes to red and, unless forestalled by the engineman, an automatic application of the brakes occurs and the train is stopped (Abst. p. 42).

As originally installed and as continued to 1946, the receiver coils on each locomotive were on one channel so that the current induced in the two coils was combined. This single channel equipment operates so that when stray or foreign current flows in both rails and is equally divided, the operation of the equipment is not affected. However, if the stray or foreign current is flowing in one rail only and is strong enough, a false green cab signal will result, even though the alternating current is shut off in the other rail by reason of a break or other fault (Abst. p. 61). The only way Illinois Central had of knowing that the one channel equipment was giving a false green signal was by a wreck or a near wreck (Abst. p. 91).

The single channel equipment continues to be used on steam locomotives. On diesel locomotives placed in service about 1946, however, the receiver coils for each rail were connected to separate channels. This two channel equipment is designed so that the current in both rails must be equal and flowing in opposite directions to produce a green cab signal. If stray or foreign current flows in one direction only, either in one or in both rails, its presence has the effect of upsetting the balance and results in a red cab signal (Abst. p. 61). The two channel equipment is much more sensitive than the one channel equipment, and after its installation Illinois Central began to experience more false red signals (Abst. p. 97).

A natural accompaniment of the presence of 60 cycle alternating current in a transmission line and the magnetic field created by this current is that other nearby electrical conductors will have induced in them alternating current of a frequency of 60 cycles (Abst. p. 148). It was found by the Illinois Commerce Commission that, either by such induction or by conduction through the ground of current from Appellant's lines, stray or foreign currents were being produced in Illinois Central's tracks (Abst. pp. 245-46, Appx. "F", p. 51a).

Illinois Central in its complaint filed with the Illinois Commission asked that Commission to require Appellant to make such changes in its plant equipment or facilities as would eliminate the stray or foreign currents in its automatic train stop system. To accomplish this objective Illinois Central offered in evidence four plans, the adoption of any one of which it suggested would provide the relief sought in its complaint. These plans were: (1) move Appellant's lines away from the railroad; (2) convert the power lines to delta systems and employ adequate transpositions; (3) reduce the load of the power lines; and (4) use ungrounded multi-conductor cable (Abst. p. 76).

Bulletin No. 1 published in 1930 by the Committee o Automatic Train Control of the American Railway Asso ciation of which Illinois Central's then Vice President wa Vice Chairman contained the following:

> "During the development of the continuous system it became evident that to avoid interference fro other sources of alternating current, a special fre quency would be required. After various tests and in vestigations a frequency of 100 cycles was adopted a being less subject to interference from commercia sources" (Addnl. Abst. p. 2).

Illinois Central's signal engineer testified that he agree with the 1930 Committee report (Addnl. Abst. p. 5). Illi nois Central's Assistant Chief Engineer testified that noth ing more could be done by the railroad short of makin basic changes in the train stop system to prevent the fals signals caused by foreign current (Abst. pp. 78, 79), an that the best engineering solution was to convert the rail road's train stop systems to 100 cycles (Abst. p. 119). I was not contended and the Illinois Commission made n finding that the stray or foreign current was caused by any negligence of Appellant.

In connection with Illinois Central's train stop system here in question, the Interstate Commerce Commission in its order dated August 11, 1926 (115 I. C. C. 256, 268, 269), following its inspection of said system, among other things, said:

> "The Illinois Central Railroad Company is expected to comply with the following requirements as to maintenance, tests, inspection, reports, etc.:
>
> • • •
>
> "4. • • • **The presence of stray or foreign current in the track rails could, under certain circumstances, cause serious trouble and this is mentioned here, inas-**

much as it will be necessary to watch the matter and, should such trouble develop, to promptly employ adequate means for overcoming the difficulty.

* * *

"The Illinois Central Railroad Company is expected **promptly and currently** to inform us as to the progress made **in conformity to all of the above stated requirements and recommendations.**" (Emphasis supplied.)

Illinois Central is required to make a monthly report to the Interstate Commerce Commission showing all false signals experienced by the Company in its automatic train stop systems and the causes therefor (Addnl. Abst. pp. 2, 3). Illinois Central's signal engineer testified that the reports from the operating department were screened and where it was known foreign current was present false signals due to such foreign current were not reported to the Interstate Commerce Commission (Addnl. Abst. p. 7). Three locomotive engineers testified that they had been instructed not to report false red signals experienced in certain areas and that they did not report such false signals (Addnl. Abst. pp. 23, 24, 25).

The orders of the Illinois Commission of March 9, 1954 (Appendix "E"), of October 26, 1954 (Appendix "F"), and of March 8, 1955 (Appendix "G"), directed Illinois Central to change its automatic train stop system to operate at 100 cycles in place of 60 cycles per second. Upon determining that the relief sought by the complaint against Appellant could not be granted and upon hearing Illinois Central's witness testify that the railroad was ignoring the positive direction contained in the Interstate Commerce Commission's order to watch for stray or foreign current and if the same developed to employ adequate means for overcoming the same and to promptly and currently inform the Interstate Commerce Commission thereof, the Illinois Commission should have immediately

brought these matters to the attention of the Interstate Commerce Commission for appropriate action[1] in place of issuing the orders[2] of March 9, 1954, October 26, 1954, and March 8, 1955.

RAISING THE FEDERAL QUESTIONS BELOW.

The federal questions which Appellant raises on this appeal were raised as a matter of record in Appellant's application to the Illinois Commerce Commission for a rehearing relative to the Order of that Commission dated March 8, 1955. The relevant portions of said application for rehearing are as follows:

> Central Illinois Public Service Company, party to the above entitled proceeding, hereinafter referred to as "Power Company", comes now and makes application for a rehearing therein, and asks that the Order entered therein on the 8th day of March, 1955, be rescinded, altered or amended for the following reasons:

---

[1] Section 8 of the Public Utilities Act (Ill. Rev. Stat. 1959, Chap. 111⅔, Vol. 2, p. 1196), in part is as follows:

> "The Commission may confer in person, or by correspondence, by attending conventions, or in any other way, with Commissions and any and all agencies dealing with public utilities of other states and of the United States on any matters relating to public utilities."

Paragraph 2 of Section 13 of the Interstate Commerce Act, 44 U. S. C., § 13 (2), in part is as follows:

> "Said Commission shall, in like manner and with the same authority and powers, investigate any complaint forwarded by the Railroad Commissioner or Railroad Commission of any State or territory at the request of such Commissioner or Commission, and the Interstate Commerce Commission shall have full authority and power at any time to institute an inquiry, on its own motion in any case as to any matter or thing concerning which a complaint is authorized to be made. * * * Representatives of State Commissions sitting with the Commission, under the provisions of this Section, in cases pending before the Commission, shall receive such allowances for travel and subsistence expense as the Commission shall provide."

. . .

11. It exceeds the power of the Commission.

12. It is beyond the jurisdiction of the Commission.

13. It requires the Power Company to bear a part of the cost of altering the automatic train stop system and appurtenant equipment of complainant, over the alteration, construction, installation, maintenance and operation of which automatic train stop system and appurtenant equipment the Commission is without authority, power or jurisdiction.

. . .

15. It erroneously orders the Power Company to bear a part of the cost for the alteration and improvement of a facility which is the sole propert of complainant.

16. It takes the property of the Power Company without compensation and violates Section 13 of Article II of the Illinois Constitution and Section 1 of the Fourteenth Amendment to the Constitution of the United States in that, because the operation of complicated electrical equipment is thought to be affected by the Power Company's transmission lines, it requires the Power Company to pay part of the cost to add to and improve extremely sensitive electrical instruments which are private property of complainant.

. . .

25. It is beyond the power or jurisdiction of the Commission to order Power Company to bear any part of the actual cost of converting the automatic train stop system and appurtenant equipment of complainant so that it will operate at a frequency of 100 cycles per second instead of at 60 cycles per second.

The above mentioned application for rehearing was denied by the Illinois Commission on April 20, 1955. The issues which Appellant could raise before the Circuit

Court of Shelby County were limited to those included in said application for rehearing. "An Act Concerning Public Utilities", Ill. Rev. Stat. (1959), c. 111⅔, § 67. Section 68 of said Act provides that the appeal shall be tried therein without formal pleadings." The Circuit Court of Shelby County found that the final order and decision of the Illinois Commerce Commission entered on March 8, 1955, was without the jurisdiction of said Commission and set aside said order (Appendix "D").

The record and the questions raised thereon before the Supreme Court of Illinois were the same as those before the Circuit Court of Shelby County.

The fact that the federal questions were adequately and properly raised was recognized by the Supreme Court of Illinois in its opinion. It said:

> "We next consider the Power Company's contention that the Commission was totally without jurisdiction to order it to pay a portion of the cost of changing the Railroad's automatic train-stop system, because the Interstate Commerce Commission had exclusive jurisdiction over such system. Section 26 of the Interstate Commerce Act (U. S. C. A., Title 49, Sec. 26) does vest the Interstate Commerce Commission with broad power to order railroad carriers to install and maintain automatic train-stop systems which comply with the specifications and requirements of the Interstate Commerce Commission. The train-stop system of the Railroad in the case at bar was installed and approved pursuant to orders of the Interstate Commerce Commission. 69 I. C. C. 258, and 115 I. C. C. 270.
>
> • • •
>
> "• • • However, the Power Company insists that Congress has so far occupied the field of train-stop regulation that any action by a State in that area is

precluded, and cites **Napier v. Atlantic Coast Line R. Co.**, 272 U. S. 605, 47 S. Ct. 207, 71 L. Ed. 432, in support of its contention. * * *

"In the present case we are not called upon to determine the extent to which the Commission could supplement or add to the Federal requirements for train-stop systems. We need only decide whether the Commission can choose the most economically feasible manner of eliminating a grave hazard to the people of this State, when such a choice requires action that is clearly permissible under Federal law. We find in the Interstate Commerce Act no intention to preclude such an exercise of the police power" (Appx. A, pp. 10a, 11a, 12a).

This Court will accept the recognition by the State Court that the federal questions were properly raised.

Raley v. Ohio, 360 U. S. 423, 436, 3 L. Ed. 2d 1344, 1354, 79 S. Ct. 1257 (1959);

Charleston Fed. Sav. & L. Assn. v. Alderson, 324 U. S. 182, 185-186, 89 L. Ed. 857, 861, 65 S. Ct. 624 (1945);

Home Ins. Co. v. Dick, 281 U. S. 397, 407, 74 L. Ed. 926, 933, 50 S. Ct. 338 (1930).

THE FEDERAL QUESTIONS ARE SUBSTANTIAL.

Section 26 of the Interstate Commerce Act, originally enacted February 28, 1920, (Appendix H), was amended effective August 26, 1937. A copy of Section 26 as so amended is attached hereto as Appendix I. Section 26 as amended in 1937 (a) empowers the Commission to order any carrier to install an automatic train stop and cab-signal system which complies with specifications and requirements prescribed by the Commission; (b) prohibits the discontinuance or material modification of any such

system without the approval of the Commission; (c) requires each carrier to file with the Commission its rules, standards and instructions for the installation, inspection, maintenance and repair of such systems, such rules, standards and instructions to be approved by the Commission; (d) empowers the Commission to prepare rules, standards and instructions for the installation, inspection, maintenance and repair of such systems, to be observed by any carrier failing to file such rules, standards and instructions; (e) requires that any changes made by a carrier with respect to such rules, standards and instructions be approved by the Commission; (f) empowers the Commission on its own motion to revise, amend or modify any such rules, standards and instructions; (g) authorizes the Commission to inspect and test any system and to determine whether such system is in proper condition to operate and provide adequate safety; (h) prohibits any carrier from using any system unless the same is in proper condition and safe to operate, and unless the same has been inspected from time to time by the Commission; (i) requires each carrier to report to the Commission failures of such system to indicate or function; (j) requires each carrier to report accidents resulting from failure of such system; (k) makes it the duty of the Commission to see that the requirements of this section and the orders, rules, regulations, standards and instructions made pursuant thereto are observed by carriers; and (l) provides penalties for violations of any provision of this section or failure to comply with any order, rule, regulation, standard or instruction made by the Commission pursuant thereto.

This Court has not passed upon the question as to whether Congress, by the enactment of Section 26, as amended in 1937, pre-empted and occupied the field of regulation of automatic train stop devices and the other equipment covered by the Section. The 1937 amendment was patterned after the Boiler Inspection Act. The Boiler

Inspection Act (45 U. S. C., §§ 22-34) pre-empts and occupies the field of regulation of the equipment covered by that Act.

The power delegated to the Interstate Commerce Commission by the Boiler Inspection Act, has been held to be a general one. In **Napier v. Atlantic Coast Line Railway Co.**, 272 U. S. 605, 71 L. ed. 432, 47 S. Ct. 207, this Court was required to determine the scope and effect of the Boiler Inspection Act. The State of Georgia had enacted a statute prescribing an automatic door to the fire-box, and the State of Wisconsin had enacted a statute which prescribed a cab curtain. In Georgia the details of the devices were prescribed by the Legislature. In Wisconsin, the specifications were prescribed by the State Railroad Commission. In each instance, an interstate carrier sought to enjoin State officials from enforcing the respective statute with respect to locomotives not equipped with the prescribed devices. The cases arising in both States were consolidated for decision. This Court, in holding that the federal legislation precluded the operation of the State enactments, said, at 272 U. S. 610-11, 613, 71 L. ed. 438, 439:

> **"Each device was prescribed by the state primarily to promote the health and comfort of engineers and firemen. Each state requirement may be assumed to be a proper exercise of its police power, unless the measure violates the commerce clause. It may be assumed, also, that there is no physical conflict between the devices required by the state and those specifically prescribed by Congress or the Interstate Commerce Commission; and that the interference with commerce resulting from the state legislation would be incidental only. * * * But the power delegated to the Commission by the Boiler Inspection Act as amended is a general one. It extends to the design, the construction and the material of every part of**

the locomotive and tender and of all the appurtenances.

"The requirements here in question are, in their nature, within the scope of the authority delegated to the commission. An automatic fire door and an effective cab curtain may promote safety. Keeping firemen and engineers in good health, like preventing excessive fatigue through limiting the hours of service, clearly does so, although indirectly; and it may be found that to promote their comfort would likewise promote safety. * * * The duty of the commission is not merely to inspect. It is, also, to prescribe the rules and regulations by which fitness for service shall be determined. Unless these rules and regulations are complied with, the engine is not 'in proper condition' for operation. Thus the commission sets the standard. By setting the standard it imposes requirements. * * *

" * * * **Because the standard set by the commission must prevail, requirements by the states are precluded, however commendable or however different their purpose.** * * *

"If the protection now afforded by the Commission's rules is deemed inadequate, application for relief must be made to it." (Emphasis supplied.)

The 1937 amendment to Section 26 was introduced in that year as Senate Bill 29 (75th Cong., 1st Sess.). Substantially identical bills had been introduced in both the House and the Senate in the 74th Congress (H. R. 2748 and Sen. 1288). In the Senate hearings on the Senate Bill in the 74th Congress, one witness favoring enactment of the legislation testified, referring to the Boiler Inspection Act as the Locomotive Inspection Act, as follows:

"In connection with statements to the effect that this bill would broaden the authority of the Interstate

Commerce Commission over safety devices to a very great extent, we desire to point out that the provisions of the bill follow very closely the provisions of the Locomotive Inspection Act which has been in effect for a great many years. The Interstate Commerce Commission now has every authority in respect to other safety devices which this bill would give it over signaling systems."

(Hearings before a Subcommittee of the Senate Committee on Interstate Commerce on Sen. 1288, 74th Cong., 1st Sess., pp. 57-58, 1935.)

The report of the House Committee on Interstate Commerce to the House on Senate Bill 29 included the following:

"There are now many thousands of miles of railroad in the country regularly operated without the use of train orders. The indications given by the automatic signals are the only form of protection ordinarily in use. Records of railway accidents show that the safety of railway employees and of the public would be promoted by the adoption and enforcement of adequate standards in regard to installation, repair and maintenance of these very important safety devices and **by giving the Interstate Commerce Commission complete authority to make inspections and to require that unsafe conditions be rectified.**" (Emphasis supplied.)

(H. Rep. No. 1081, 75th Cong., 1st. Sess., p. 2, 1937.)

The intent of Congress to give the Interstate Commerce Commission comprehensive and exclusive jurisdiction over regulation of the devices covered by Section 26 was further indicated by an amendment made to Senate Bill 29. This bill, as originally introduced, and the similar bills in the

74th Congress, covered highway grade crossing protection devices. Mr. W. M. Vandersluis, General Superintendent, Telegraph and Signals, of the Illinois Central, appearing for the Association of American Railroads, objected that the regulation of highway grade crossing protection devices should be left under State and municipal control. He made no such objection as to the remaining coverage of the proposed legislation. (Hearings before a Subcommittee of the Senate Committee on Interstate Commerce on Sen. 1288, 74th Cong., 1st Sess., p. 43, 1935; Hearings before a Subcommittee of the House Committee on Interstate and Foreign Commerce on H. R. 2748, 74th Cong., 2d Sess., p. 24, 1936.) It appears Congress was persuaded by this objection in favor of local control of grade crossing devices, for it eliminated coverage of those devices from Senate Bill 29 before enacting it. 81 Cong. Rec. 4643 (1937).

Congress, in enacting Section 26 in its present form in 1937 and patterning it after the Boiler Inspection Act, must have been mindful of this Court's decision in the **Napier** case and therefore intended that Section 26 likewise occupy the whole field of regulation of the equipment covered by the section. The intent of Congress is the ultimate test in questions of pre-emption of areas of regulation by Federal laws. **Guss v. Utah Labor Board**, 353 U. S. 1, 10, 1 L. ed. 2d 601, 607, 77 S. Ct. 598, 609 (1957).

The rule as to when the federal government occupies a particular field to the exclusion of the states is stated also by this Court in **Southern R. Co. v. Railroad Commission of Indiana**, 236 U. S. 439, 447, 448, 35 S. Ct. 304 (1915), 59 L. ed. 661, 666. In that case the Court said:

> "Without, therefore, discussing the many cases sustaining the right of the states to legislate on subjects which, while not burdening, may yet incidentally affect interstate commerce, it is sufficient here to say

that Congress has so far occupied the field of legislation relating to the equipment of freight cars with safety appliances as to supersede existing and prevent further legislation on that subject. • • •

"The test, however, is not whether the state legislation is in conflict with the details of the Federal law or supplements it, but whether the state had any jurisdiction of a subject over which Congress had exerted its exclusive control. The safety appliance act having superseded the Indiana statute, the judgment imposing the penalty must be reversed, and the case remanded for further proceedings not inconsistent with this opinion."

It is established by **Napier v. Atlantic Coast Line Railroad Co.** and **Southern R. Co. v. Railway Co. of Indiana,** discussed above, that where Congress has intended to pre-empt a field of regulation, it is without legal significance that the Interstate Commerce Commission has made no requirement inconsistent with the state legislation. The Napier case has been cited as an example of implied conflict between the exercise by the United States of its power of legislation and a regulation of the state. **Cloverleaf Butter Co. v. Patterson,** 315 U. S. 148, 156, fn. 7, 86 L. ed. 754, 762, 62 S. Ct. 491 (1942). As the powers and duties conferred upon the Interstate Commerce Commission by Section 26 are very similar to those conferred by the Boiler Inspection Act under consideration in the Napier case, the same implied conflict must exist between the federal legislation and the orders of the Illinois Commerce Commission in the instant case. Furthermore, the challenged orders of the Illinois Commerce Commission attempt to regulate a matter which has been specifically covered by the Interstate Commerce Commission. In its report dated August 11, 1926 (115 I. C. C. 256, 269), the Interstate Commerce Commission required that Illinois Central should "promptly employ adequate means for

overcoming" any difficulty arising from the presence of stray or foreign current. It is submitted that the orders of the Illinois Commerce Commission impliedly conflict with and invalidly purport to supplant federal regulation of Illinois Central's automatic train stop system.

It has been said by this Court that Congressional intent to pre-empt a field of regulation will not be implied "unless the act of Congress fairly interpreted is in actual conflict with the law of the State." **Savage v. Jones**, 225 U. S. 501, 533, 56 L. ed. 1182, 1185, 32 S. Ct. 715 (1912). This rule was repeated in the recent case of **Huron Portland Cement Company v. City of Detroit**, ... U. S. ..., 4 L. ed. 2d 852, 80 S. Ct. ... (1960). There it was held that the "extensive and comprehensive set of controls over ships and shipping" maintained by Congress, including federal inspection and certification, did not preclude or invalidate provisions of a smoke control ordinance of the City of Detroit even though compliance with the ordinance would require changes in equipment which had met federal inspection standards and which was installed on ships which had been certified for navigation on the Great Lakes. This Court said:

> "The thrust of the federal inspection laws is clearly limited to affording protection from the perils of maritime navigation.
>
> • • •
>
> "By contrast, the sole aim of the Detroit ordinance is the elimination of air pollution to protect the health and enhance the cleanliness of the local community.
>
> • • •
>
> "We conclude that there is no overlap between the scope of the federal ship inspection laws and that of the municipal ordinance here involved."

This discussion of the purposes of the federal and the local laws suggests that federal and local regulation of

the same equipment may be allowed where the purposes of the two regulations are different. See **Local 24 of I. B. of T. C., W. & H. v. Oliver,** 358 U. S. 283, 297, 3 L. ed. 2d 312, 322, 79 S. Ct. 297 (1959); **United Construction Workers v. Laburnum Constr. Corp.,** 347 U. S. 656, 664-665, 98 L. ed. 1025, 1031, 74 S. Ct. 833 (1954). In the instant case, however, the purpose of Section 26 of the Interstate Commerce Act and the purpose of the orders of the Illinois Commerce Commission are the same, namely, to promote the safety of railroad operation.

The primary purpose of the three orders of the Illinois Commission challenged in this case was to promote the safety of persons and property by requiring conversion of Illinois Central's train stop system, and the allocation of the cost thereof was collateral to and dependent upon the ordering of the conversion. Enforcing the allocation of cost alone would not carry out the intent and purpose of the Illinois Commission. The provision for allocation of cost cannot stand alone and the orders must therefore stand or fall as a whole. Accordingly, appellant, being adversely affected, has standing to challenge the validity of the orders on the ground that they invade a field of regulation which has been pre-empted by the enactment by Congress of Section 26 and the exercise by the Interstate Commerce Commission of the powers thereby conferred.

The rules governing standing to raise a question of federal pre-emption may be drawn from the decisions dealing with standing to question the constitutionality of statutes. In **Re Hendrickson,** 12 Wash. 2d 600, 123 P. 2d 322 (1942), the court held that where certain portions of a statute were unconstitutional, a party affected only by other portions of the statute could challenge the constitutionality of the statute because the unconstitutional and constitutional portions of the statute were inseparable. The court stated the law as follows, at 123 P. 2d 326:

"The general rule announced by literally scores of cases is that a person cannot attack as unconstitutional a statute or provision of a statute not applicable to his particular situation. (Citations omitted.) However, the rule is subject to an exception which is stated in Rottschaefer on Constitutional Law, at p. 29, as follows:

"'The general rule that denies a person the right to question the constitutionality of an act in respect of its enforcement against others is inapplicable in some situations. The unconstitutionality of a part of a statute sometimes renders the remainder thereof legally inoperative. The persons affected by the remainder are permitted to question the constitutionality of the invalid part even though it does not apply to them, since that is an essential element in establishing that the remainder is legally inoperative as to them.'

"A portion of a statute will render the whole of it invalid, and the exception will be applied where the unconstitutional portion is inseparable from the remainder. (Citations omitted.)

"The all-important, ultimate test is the intention of the legislature. Would the legislature have passed the act with the objectionable portions eliminated?"

Under the above exception to the general rule a petitioner has been held to have standing to attack a statute on the ground that it was unconstitutional in the followings cases: **McFarland v. City of Cheyenne**, 48 Wyo. 86, 98-99, 42 P. 2d 413, 416 (1935); **State v. Hall**, 129 Neb. 669, 676-77, 262 N. W. 835, 839-840 (1935); **Smith v. Thompson**, 219 Iowa 888, 896-97, 258 N. W. 190, 193-194 (1934); **State v. Louisiana Coca-Cola Bottling Co.**, 169 La. 167, 175, 124 So. 769, 772 (1929). See also **Conrad v. State**, 41 Del. 107, 117, 16 A. 2d 121, 126 (1940); **Shad v. DeWitt**, 158 Fla.

27, 30-31, 37 So. 2d 517, 519-529 (1946); **City of Elmhurst v. Buettgen**, 394 Ill. 248, 254, 68 N. E. 2d 278, 282 (1946); **Thompson v. Wallin**, 276 App. Div. 463, 470, 95 N. Y. S. 2d 784, 792 (1950).

As to separability of parts of a statute, the rule often stated by this Court is that "the unobjectionable part of a statute cannot be held separable unless it appears that, 'standing alone, legal effect can be given to it and that the legislature intended the provision to stand, in case others included in the act and held bad should fail.'" **Williams v. Standard Oil Co.**, 278 U. S. 235, 241, 73 L. ed. 287, 309, 49 S. Ct. 115 (1929); **Carter v. Carter Coal Co.**, 298 U. S. 238, 312, 80 L. ed. 1160, 1189, 56 S. Ct. 855 (1936); **Lynch v. U. S.**, 292 U. S. 571, 586, 78 L. ed. 1434, 1444, 54 S. Ct. 840 (1934); **Dorchy v. Kansas**, 264 U. S. 286, 289-90, 68 L. ed. 686, 689-90, 44 S. Ct. 323 (1924).

In the absence of a saving provision declaring that the invalidity of a portion of a statute shall not affect the remainder, "the presumption is that the legislature intends an act to be effective as an entirety—that is to say, the rule is against the mutilation of a statute; and if any provision be unconstitutional, the presumption is that the remaining provisions fall with it." **Carter v. Carter Coal Co.**, supra, 298 U. S. at 312, 80 L. ed. at 1189; **Williams v. Standard Oil Co.**, supra, 278 U. S. at 241, 73 L. ed. at 309. There is no saving provisions in the orders of the Illinois Commission. The presumption against multilation is therefore applicable, and the orders of the Illinois Commission are invalid both as they affect Illinois Central and as they affect Appellant.

Where "the plan and purpose of the Act fails of accomplishing its manifest purpose" by reason of invalidity of part of the Act, the whole Act is invalid. **Lemke v. Farmers Grain Co.**, 258 U. S. 50, 60, 66 L. ed. 458, 464, 42

S. Ct. 244 (1922). Without the portions requiring Illinois Central to convert its train stop system, the orders of the Illinois Commission challenged in this case fail of accomplishing their manifest purpose of promoting the safety of persons and property.

The intent of Congress to pre-empt the field of regulation of automatic train stop systems, implemented by the orders of the Interstate Commerce Commission, has been considered. The standing of Appellant to raise the question of federal pre-emption has been shown. The remaining question is whether the orders of the Illinois Commission take Appellant's property without due process of law in violation of the 14th Amendment to the Constitution of the United States, (1) because they take Appellant's property for a use not benefiting Appellant and having nothing to do with Appellant's business as a public utility without any finding of fault on the part of Appellant, and (2) because they take Appellant's property for the private purpose of paying part of the cost of the substitution of a 100 cycle for a 60 cycle train stop system made voluntarily by Illinois Central.

Generally a state may not take private property except for a public purpose and upon payment of just compensation. A public utility, however, may be compelled to make expenditures for a public purpose without receiving direct compensation. **Chicago and Northwestern R. Co. v. Ochs**, 249 U. S. 416, 421, 63 L. ed. 678, 683, 39 S. Ct. 343 (1919). The right to take property of a public utility is limited to taking property for purposes connected with the public duties which it has assumed, and it is a violation of due process to compel a public carrier to devote its property to purposes unconnected with its public duty of transportation and from which it can obtain no benefit. **Delaware, L. & W. R. Co. v. Morristown**, 276 U. S. 182, 193-94, 72 L. ed. 523, 527-28, 48 S. Ct. 276 (1928); **Great Northern R.**

Co. v. Cahill, 253 U. S. 71, 64 L. ed. 787, 40 S. Ct. 457 (1920); **Great Northern R. Co. v. Minnesota**, 238 U. S. 340, 345, 59 L. ed. 1337, 1339, 35 S. Ct. 753 (1915). It is submitted that Appellant may not, consistent with the 14th Amendment, be required to pay for changes in Illinois Central's railroad equipment, a matter wholly unrelated to Appellant's public business of generating, transmitting, distributing and selling electric energy.

The second reason why the orders of the Illinois Commission contravene the 14th Amendment rests on the preemption by Congress of the field of regulation of automatic train stop system. Of course Appellant may not be required to make an expenditure or otherwise have its property taken unless a tribunal having jurisdiction of the matter validly finds that the expenditure or taking is justified by some public purpose. **Thompson v. Consolidated Gas Utilities Corp.**, 300 U. S. 55, 80, 81 L. ed. 510, 523-24, 57 S. Ct. 364 (1937); **Chicago, St. P. M. & O. R. Co. v. Holmberg**, 282 U. S. 162, 166-67, 75 L. ed. 270, 273, 51 S. Ct. 56 (1930). As has been demonstrated above, the Interstate Commission has exclusive jurisdiction to regulate automatic train stop systems, and the orders of the Illinois Commission are invalid and void at least insofar as they purport to require Illinois Central to substitute a 100 cycle train stop system for its 60 cycle system. Without the justifying purpose of the ordered change in Illinois Central's train stop system, the allocation of cost order of the Illinois Commission is simply a taking of the property of Appellant for the benefit of a private person, namely, to pay part of the cost of changes in its equipment voluntarily made by Illinois Central. Such a taking violates the due process clause of the 14th Amendment to the Constitution of the United States.

CONCLUSION.

Appellant respectfully suggests that this appeal brings before the Court federal questions under the Constitution and laws of the United States which are far-reaching and important, and the questions presented are so substantial as to require plenary consideration with briefs on the merits and oral argument for their resolution.

Respectfully submitted,

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APPENDIX.

APPENDIX "A".

In the Supreme Court of the State of Illinois.

Opinion of the Supreme Court of the State of Illinois.

(Entered January 22, 1960.)

Docket No. 34915—Agenda 18—November, 1959.

Central Illinois Public Service Company, Appellee, v. Illinois Commerce Commission ex rel. Illinois Central Railroad Company, Appellant.

Mr. Justice Davis delivered the opinion of the court:

This case involves the jurisdiction of the Illinois Commerce Commission, herein called the Commission, to compel Central Illinois Public Service Company, herein called the Power Company, to contribute to the cost of changing the train-stop system of the Illinois Central Railroad Company, herein called the Railroad.

In 1953 the Railroad filed a complaint with the Commission alleging that the Power Company had allowed current to escape from its transmission lines which interfered with the tran-stop system of the Railroad and caused false signals that endangered public safety. The complaint prayed that the Power Company take the necessary steps to correct the interference at its cost. The Power Company answered, denying responsibility for the interference and challenging the jurisdiction of the Commission.

After extensive hearings the Commission found that current escaping from the Power Company transmission lines interfered with the train-stop system of the Railroad, creating a serious hazard to the public; that, since the cost of correcting the Power Company's facilities would be

excessively high, the best engineering solution would be to require a conversion of the Railroad's train-stop system from 60-cycle to 100-cycle current, thereby immunizing it from interference, and to require the Power Company to supply 100-cycle current to the Railroad; that the change would require the joint action of the utilities; and that its cost should be borne jointly by them.

The Railroad and Power companies were given 30 days to agree on an apportionment of such costs, but they were unable to do so. The Commission then held further hearings upon which it affirmed its prior order and found that, since the Power Company had not made 100-cycle current available, the Railroad should perform all the work and provide the necessary conversion equipment. The Commission ordered that the Railroad and Power companies each bear 50 per cent of the cost of the conversion.

Rehearing was denied, and the Power Company appealed to the circuit court of Shelby County, which held that the order was beyond the jurisdiction of the Commission and set it aside. The Railroad and the Commission perfected a direct appeal to this court pursuant to section 69 of the Public Utilities Act. Ill. Rev. Stat. 1957, chap. 111⅔, par. 73.

The record contains voluminous testimony and numerous exhibits which are technical and complex, but fortunately a brief summary of the evidence is sufficient to illuminate the legal issues involved.

In 1922 the Interstate Commerce Commission ordered the Railroad and certain other railroads throughout the United States to install automatic train-stop or train-control devices. Pursuant to that directive, the Railroad conducted tests and determined that the proper facility would be the continuous automatic train-stop system, which was

installed in January, 1926, and operated between Champaign and Branch Junction, Illinois, a distance of 121.8 miles. The track rails were utilized to carry the electrical current necessary to operate both the track circuits and the train-stop equipment on the engines.

The transmission lines of the Power Company paralleled and at points crossed over this line of double tracks of the Railroad. The train-stop system was installed to operate on 60 cycles alternating current, the frequency which was being supplied by the Power Company. In fact, it was questioned whether the Railroad could have then installed a 100-cycle system since the Power Company could not have furnished adequate three-phase service.

Prior to its installation, tests were conducted for over a year to see if there was any foreign current which would interfere with the 60-cycle system and none was detected. Twenty-two years after the installation, foreign current first began to affect the train-stop system and continued with increased intensity through 1953. Such foreign current in the system caused false signals—a green light would appear when a red light should show and vice versa. Joint tests conducted by the Railroad and the Power Company during 1952 and 1953 showed that when the lines of the Power Company were de-energized, all foreign current in the track disappeared.

At the time of the hearing before the Commission, the Railroad operated 12 regular passenger trains, 32 freight trains and numerous special unscheduled trains over the tracks in question, and in 1952, it carried over 800,000 passengers over such tracks. Its passenger trains travelled at a miximum speed of 100 miles per hour, while its freight trains operated at 50 to 60 miles per hour. The most dangerous aspect of false signals is that they are more fre-

quent during wet and foggy weather which is the time when true signals are of paramount importance.

During the period from 1926 to 1953, the Power Company changed, extended and enlarged its transmission lines more than 20 times, both with and without Commission approval. The length of such lines, parallel to the Railroad, was increased from 61 to 113.5 miles, and the intensity of the load carried, from 125 million to 1 billion 540 million KWH, an increase of 1,132%. Part of this construction was multi-grounded and part uni-grounded, while in some instances "Y" circuits and delta circuits were used.

The elimination of the foreign current from the transmission lines of the Power Company could be accomplished by converting all the multi-grounded lines to a delta type of circuit. Also, the interference could be eliminated by (a) moving the power lines away from the Railroad, (b) employing adequate transposition, (c) reducing the loads on given power lines and building additional lines to handle increased need for power, (d) use of ungrounded multi-conductor cable instead of open wire, and (e) installing larger wires containing more copper on existing lines. However, the cost of changing the Power Company facilities would amount to millions of dollars.

The witnesses for the Power Company all stated that the only practical solution was to convert the Railroad's train-stop system from 60 to 100 cycles which would eliminate the false signals at far less expense than that involved under any other suggested procedure. While it was first estimated that the conversion would cost $170,000, the revised cost estimates after the work began were $142,784.

The Power Company contends that the Railroad cannot recover the cost of changing its train-stop system in the

absence of evidence that the Power Company has been negligent. It further urges that the jurisdiction of the Interstate Commerce Commission is exclusive over the Railroad's train-stop system and therefore the Commission cannot compel the Power Company to pay a part of the cost of such conversion.

The Railroad and the Commission rely on the power granted the Commission, under the Illinois Public Utilities Act, to enter such orders as are necessary to promote and safeguard the security and safety of the public, and contend that this power has not been taken away by any Federal Act.

At the outset we conclude, and it is apparently conceded, that current eminating from the Power Company's transmission lines is causing such interference with the Railroad's train-stop system as to constitute a serious hazard to public safety. However, the Power Company has maintained its transmission lines in accordance with the rules and regulations of the Commission and without negligence and it therefore sylogizes that, in the absence of actionable negligence, the Commission cannot force it to pay part of the cost of the conversion of the train-stop system.

This argument misconceives the nature of the proceeding. It is not in any sense a common-law action for damages. We have carefully examined the cases cited by the Power Company and find that they all involve either common-law actions sounding in damages or suits in equity wherein an injunction was sought for wrongful interference with the use of the plaintiff's property. **Eastern and South African Telegraph Co. v. Cape Town Tramways Cos.**, 2 B. R. C. 114; **Lake Shore & Michigan Southern Railway Co. v. Chicago, Lake Shore & South Bend Railway Co.**, 48 Ind. App. 584, 92 N. E. 989; **Southwestern Public Service Co. v. Moore**, 119 Texas 391, 29 S. W. 2d 329;

Phillippay v. Pacific Power & Light Co., 120 Wash. 581, 207 Pac. 957; **Cumberland Telephone & Telegraph Co. v. United Electric Railway Co.**, 42 Fed. 273; **Georgia Power Co. v. Parker**, 48 Ga. App. 807, 173 S. E. 730.

In this controversy, we need not decide whether the Railroad has a cause of action against the Power Company for damages to its facilities or property. This is a special statutory proceeding instituted by the Railroad pursuant to section 64 of the Public Utilities Act (Ill. Rev. Stat. 1957, chap. 111⅔, par. 68). The Commission had jurisdiction over both the Power Company and the Railroad as public utilities within the meaning of section 10.3 of the act (Ill. Rev. Stat. 1957, chap. 111⅔, par. 10.3). As such public utilities deriving their franchises from the State, both must submit to the burdens, conditions and regulations imposed by the State pursuant to its police power to protect the safety and the security of the public. **Chicago and Northwestern Railway Co. v. Commerce Com.**, 326 Ill. 625.

Sections 32, 49, 50, and 57 of the act (Ill. Rev. Stat. 1957, chap. 111⅔, pars. 32, 49, 50, and 61), provide in the most comprehensive terms, that the Commission shall have the power to require changes, additions and improvements in connection with the facilities of existing public utilities to promote the security and safety of its employees and the public. **Brotherhood of Railroad Trainmen v. Elgin, Joliet and Eastern Railway Co.**, 382 Ill. 55; **Chicago, Burlington and Quincy Railroad Co. v. Commerce Com. ex rel. Brotherhood of Railroad Trainmen**, 364 Ill. 213; **Chicago Motor Coach Co. v. City of Chicago**, 337 Ill. 200; **Village of Atwood v. Cincinnati, Indianapolis and Western Railroad Co.**, 316 Ill. 425.

The authority for the exercise of jurisdiction over the Power Company is not that it has acted negligently or with malice. Rather the power of the Commission arises

from the fact that the exercise of the Power Company's franchise by the transmission of current in close proximity to the Railroad's tracks has created a condition which caused the existence of false signals and snelf signals constitute a hazard to the safety of the public and the employees of the Railroad. Such condition gives rise to power and jurisdiction in the Commission without regard to fault on the part of either public utility.

This distinction, as pointed out by a California case, is especially applicable here. In **Postal Telegraph-Cable Co. v. Railroad Com.**, 197 Cal. 426, 241 Pac. 81, the California Commission found that the transmission lines of a power company created inductive disturbances to the telegraph lines of the petitioner, Postal Telegraph, and acting under statutory language almost identical to that of section 50 of our act (Cf. Cal. Stat. 1951, chap. 764, par. 762, and Ill. Rev. Stat. 1957, chap. 111⅔, par. 50), ordered the petitioner to relocate its lines and apportioned the cost at 50% to each utility. Upon appeal, the Supreme Court of California affirmed.

In answering contentions substantially the same as those advanced by the Power Company here, the California court stated, at pages 85-86:

> "We are not here concerned with any monetary damages which may have accrued to petitioner against the power company because of the negligent or improper construction or maintenance of its circuit system. The commission did not have jurisdiction to adjudicate such an issue. The question germane to the commission's duty was whether the two companies could exist in their present location and perform public services under grant of the laws of the state with due regard to public efficiency and the safety of person and property. The commission undertook to exer-

cise its power upon complaint by the petitioner in accordance with the provisions of section 36, Public Utilities Act. * * * Another reason which moved the commission to make its order directing the relocation of a portion of petitioner's line was that the cost of relocating the power lines was estimated approximately at $120,000, whereas the cost of relocating petitioner's was estimated at about $22,000. This of itself was a legitimate matter for the consideration of the commission.

"Much law has been written, and many divergent opinions expressed, upon the question as to whether or not the first grantee of a franchise has superior rights over a junior licensee, and whether, so long as the first licensee is not disturbed in its occupancy, it must submit to such unavoidable inconveniences as may result from a reasonable and fair exercise of the junior licensee's franchise, and whether damages which are merely a natural incident to and the direct and immediate result of the junior licensee's operations are actionable, and will be enjoined. * * * We do not think the commission was called upon to decide upon which side of these momentous questions the weight of authority is to be found. It was not created merely to act as an arbiter of disputes between private electric companies, but to promote the public interest and safety generally. In making its order the commission was acting within the limits of the police power of the state, and, as neither company has a vested right to remain where it was located as against the public's welfare, safety, and convenience, its order directing a greater horizontal separation of two dangerous agencies was properly made.

"We entertain no doubt but that the authority of the commission extends to a correction of just such dangers as were shown to exist in the instant case.

No one would dispute the right of the commission to require a separation of two railroad tracks laid so closely together as to endanger the safety of passengers and the general public or its power to order a wider separation of two high-power electric lines so close in parallel as to be an admitted menace to life and limb. The difference between the instanced cases and the instant case is in degree only.

"Said public utilities having failed to agree upon a division of the costs of the removal or relation of a fractional portion of petitioner's telegraph line, and the cost thereof being a joint charge against both within the provisions of section 36, Public Utilities Act, and the commission having fixed the proportion of the cost to be borne by each at one-half of the total cost of said change, and inasmuch as it cannot be said that the commission acted arbitrarily or oppressively in the premises, its order must be affirmed, even if it should appear to us that the apportionment of costs in favor of the petitioner was not as large as we might have allowed, were we vested with jurisdiction to fix the amount."

Subsequent to this decision the telegraph company brought suit against the power company for prior damages suffered, but the Supreme Court of California rejected the claim and pointed out that a common-law action for damages was not grounded upon the same facts which would sustain an exercise of regulatory power by the commission. **Postal Telegraph-Cable Co. v. Pacific Gas & Electric Co.**, 202 Cal. 382, 260 Pac. 1101

The record in the case at bar clearly shows that the exercise of the respective franchises of the two utilities constitutes an extreme hazard to the public. We find no substantial evidence that this hazard arose from the neg-

ligence or malice of either utility. Nevertheless it was the duty of the Commission to protect the public safety regardless of the negligence or care of the utilities involved.

If this could have been accomplished at reasonable cost by a relocation of the Power Company transmission lines, we have no doubt concerning the power of the Commission to order such relocation under section 49 of the act. But the Commission properly considered that the public must ultimately bear the burden of the cost of such relocation by reason of a change in the rate structure of the utility. It was conceded by all witnesses before the Commission that the most economically feasible solution to this hazard to public safety would be a conversion of the train-stop system to 100-cycle current.

The Commission therefore ordered this conversion by joint action of the utilities and apportioned the cost equally between them pursuant to section 50. We have examined the record and cannot say that the order of the Commission apportioning such cost is arbitrary, unreasonable, or against the manifest weight of the evidence. Therefore, it cannot be set aside on such grounds. **Illinois Central Railroad Co. v. Franklin County,** 387 Ill. 301; **Peoples Gas Light and Coke Co. v. Slattery,** 373 Ill. 31.

We next consider the Power Company's contention that the Commission was totally without jurisdiction to order it to pay a portion of the cost of changing the Railroad's automatic train-stop system, because the Interstate Commerce Commission had exclusive jurisdiction over such system. Section 26 of the Interstate Commerce Act (U. S. C., Title 49, sec. 26), does vest the Interstate Commerce Commission with broad power to order railroad carriers to install and maintain automatic tran-stop systems which comply with the specifications and requirements of the Interstate Commerce Commission. The train-

stop system of the Railroad in the case at bar was installed and approved pursuant to orders of the Interstate Commerce Commission. 69 I. C. C. 258, and 115 I. C. C. 270.

There is some doubt whether the Railroad could have installed a 100-cycle system at that time, but the 60-cycle system was then cheaper and satisfactory. From this record it appears that the change from 60 to 100-cycle current would have no effect on the operation of the system other than to substantially reduce the susceptibility of the system to foreign current. Such conversion will not violate any order or regulation of the Interstate Commerce Commission.

It is clear that State action affecting interstate commerce is precluded in three types of situations: (1) where State action directly burdens interstate commerce; (2) where State action conflicts with Federal regulations; and (3) where Congress has evidenced an intent to completely pre-empt the area of regulation involved. **Kelly v. Washington ex rel. Foss Co.**, 302 U. S. 1, 82 L. Ed. 3; **Pennsylvania Railroad Co. v. Department of Public Utilities**, 14 N. J. 411, 102 A. 2d 618.

It is apparent that the present exercise of the police power by the Commission neither burdens interstate commerce nor conflicts with any Federal Act or regulation. However, the Power Company insists that Congress has so far occupied the field of train-stop regulation that any action by a State in that area is precluded, and cites **Napier v. Atlantic Coast Line Railroad Co.**, 272 U. S. 605, 71 L. Ed. 432, in support of its contention. Nevertheless it was held in **Southern Pacific Co. v. Arizona ex rel. Sullivan**, 325 U. S. 761, 89 L. Ed. 1915, that this specific portion of the Interstate Commerce Act did not preclude all State regulations under the police power. The Supreme Court stated at 89 L. Ed. 1922: "Congress, in enacting legislation

within its constitutional authority over interstate commerce, will not be deemed to have intended to strike down a state statute designed to protect the health and safety of the public unless its purpose to do so is clearly manifested [citations], or unless the state law, in terms or in its practical administration, conflicts with the Act of Congress, or plainly and palpably infringes its policy." Also see **Kelly v. Washington**, 302 U. S. 1, 82 L. Ed. 3.

In the present case we are not called upon to determine the extent to which the Commission could supplement or add to the Federal requirements for train-stop systems. We need only decide whether the Commission can choose the most economically feasible manner of eliminating a grave hazard to the people of this State, when such a choice requires action that is clearly permissible under Federal law. We find in the Interstate Commerce Act no intention to preclude such an exercise of the police power.

In essence the Commission has found a grave hazard to public safety existed by reason of foreign current escaping from the Power Company transmission lines. The Commission could solve this problem by exercising its undoubted jurisdiction over the facilities of the Power Company, but the cost of moving the power lines away from the tracks of the Railroad would be excessively high and would place an undue burden on its customers by an ultimate increase in its rate base. The Railroad could, and has, converted its facilities at far less cost, and in a manner thoroughly compatible with Federal law. We can see no invasion of a Federally pre-empted area by this action.

By reason of the foregoing conclusions, the judgment of the trial court setting aside the orders of the Commission must be reversed, and the orders of the commission are confirmed.

Judgment reversed, orders of commission confirmed.

APPENDIX "B".

In the Supreme Court of the State of Illinois.

Judgment of the Supreme Court of the State of Illinois.

(Entered January 22, 1960.)

Be It Remembered that, to-wit: on the 22nd day of January, 1960, the same being one of the days of the term of Court aforesaid, the following proceedings were, by said court, had and entered of record, to-wit:

Central Illinois Public Service Company, Appellee, vs. Illinois Commerce Commission, ex rel., Illinois Central Railroad Company, Appellant.	Appeal from Circuit Court Shelby County, 55-15 41129.
No. 34915	

And now, on this day, this cause having been argued by counsel, and the Court having diligently examined and inspected as well the record and proceedings aforesaid, as the matters and things therein assigned for error, and now, being sufficiently advised of and concerning the premises, are of the opinion that in the record and proceedings aforesaid, and in the rendition of the judgment aforesaid, there is manifest error.

Therefore, it is considered by the Court that for that error and others in the record and proceedings aforesaid the judgment of the Circuit Court of Shelby County, in this behalf rendered, Be Reversed, Annulled, Set Aside and Wholly for Nothing Esteemed, and the orders of the commission are confirmed.

And it is further considered by the Court that the said appellant recover of and from the said appellee costs by it in this behalf expended to be taxed, and that it have execution therefor.

APPENDIX "C".

In the Supreme Court of the State of Illinois.

Order of the Supreme Court of the State of Illinois Denying Petition for Rehearing.

(Entered March 28, 1960.)

Be It Remembered, that, to-wit: on the 28th day of March, A. D. 1960, the same being one of the days of the term of Court aforesaid, the following proceedings were, by said Court, had and entered of record, to-wit:

Central Illinois Public Service Company, Appellee,	
No. 34915 vs.	Appeal from Circuit Court
Illinois Commerce Commission, ex rel., Illinois Central Railroad Company, Appellant.	Shelby County.

And now, on this day, the Court having duly considered the petition for rehearing filed herein, and being now fully advised of and concerning the premises, doth overrule the prayer of the petition and denies a rehearing in this cause.

APPENDIX "D".

In the Circuit Court of Shelby County.

Order Setting Aside Order and Decision of the Illinois Commerce Commission of March 8, 1955.

(Entered February 24, 1958.)

Final Order of Circuit Court entered February 24, 1958, in Bar of Action as follows:

This cause having been heretofore submitted upon printed briefs and arguments and taken under advisement this cause is decided. The Court finds that the final order and decision of the Illinois Commerce Commission entered on March 8, 1955, was without the jurisdiction of said Commission and is therefore set aside.

APPENDIX "E."

Order of the Illinois Commerce Commission of March 9, 1954.

INTERIM ORDER.

By the Commission:

On July 8, 1953, Illinois Central Railroad Company (Complainant herein) filed with this Commission its complaint against Central Illinois Public Service Company (Respondent herein) alleging that the current from the power lines of respondent is wrongfully interfering with the Complainant's automatic train stop system between Champaign and Branch Junction, Illinois, and praying that this Commission require respondent to make such additions, extensions, repairs or improvements to, or changes in, its existing operations, plant, equipment, apparatus, facilities or other physical property as ought reasonably to be made at those locations where Respondent's currents are interfering with Complainant's automatic train stop system, or to erect such new facilities as are necessary to promote the security or convenience of the public, or to take such other steps as may be necessary to correct the interference with Complainant's train stop system so as to promote the security or convenience of the public.

Several hearings have been held in this matter before a duly qualified examiner of this Commission and both parties have now completed, in the main, their direct evidence.

The Commission, having reviewed the evidence in this case submitted to date, is of the opinion and finds:

(1) that Complainant has filed a complaint with the Illinois Commerce Commission against Respondent in this proceeding alleging that electrical currents from

the power lines of Respondent are wrongfully interfering with Complainant's automatic train stop system between Champaign and Branch Junction, Illinois;

(2) that Complainant prays that this Commission require Respondent to make such additions, extensions, repairs or improvements to, or changes in, its existing operations, plant, equipment, apparatus, facilities or other physical property as ought reasonably to be made at those locations where Respondent currents are interfering with Complainant's automatic train stop system, or to erect such new facilities as are necessary to promote the security or convenience of the public, or to take such other steps as may be necessary to correct the interference with Complainant's train stop system so as to promote the security or convenience of the public;

(3) that Respondent has filed its answer denying any and all responsibility or liability with respect to or arising out of the interference with the automatic train stop system of the Complainant and has prayed that the Commission enter and order dismissing the complaint;

(4) that the parties to the proceeding before the Commission are agreed that irrespective of any consideration of rights or obligations of the parties under the applicable law or statutes, the best engineering solution to the problem created by interference with said Complainant's automatic train stop system and the most practical way to avoid electrical interference with the proper operation of Complainant's automatic train stop system from the operation of Respondent's power lines is for the Illinois Central to substitute for its present 60-cycle per second automatic train stop system a 100 cycle per second automatic train stop system;

(5) that the interference with Complainant's automatic train stop system creates an imminent and continuing hazard which endangers the lives and property of members of the public making use of the common carrier service rendered by Complainant as well as to its employees;

(6) that due to the complexities and technical aspects of the case, a final decision as to the respective rights and obligations of the parties may not be reached for a considerable length of time it reasonably follows that it is in the public interest that immediate steps be taken to correct the interference so as to eliminate the imminent and continuing hazard to the public and to Complainant's employees;

(7) that it appears reasonable, feasible and in the public interest to require Complainant without prejudice to the parties to forthwith take immediate steps to change its automatic train stop system from 60 cycles to 100 cycles per second.

It Is Therefore Ordered by the Illinois Commerce Commission that Illinois Central Railroad Company (Complainant herein) be, and it is, hereby required and directed to forthwith take immediate steps to change its automatic train stop system from 60 cycles to 100 cycles per second.

It Is Further Ordered that the requirement herein shall be without prejudice to the right and/or the obligations of the parties as they exist on the date of this interim order and without prejudice to the right of this Commission to enter such further order or orders as the merits of the case require.

It Is Further Ordered that this Commission retain jurisdiction of this proceeding for the purpose of entering such further order or orders as may be required.

By order of the Commission at Chicago, Illinois, this 9th day of March, 1954.

APPENDIX "F".

Order of Illinois Commerce Commission of October 26, 1954.

Copy of Commission's Order of October 26, 1954, omitting facing page, table of contents, caption and signature, in words and figures as follows:

I.

History of the Proceedings.

On July 8, 1953, the Illinois Central Railroad Company (hereinafter called the Railroad Company), an Illinois corporation and a common carrier by railroad owning and operating in interstate and intrastate commerce a system of railroad lines extending in and through fourteen states including the State of Illinois, filed with the Commission a complaint against the Central Illinois Public Service Company (hereinafter called the Power Company), an Illinois corporation engaged in the business of manufacturing, transmitting and distributing electrical energy within the State of Illinois. The Railroad Company filed the complaint as a citizen of the State of Illinois in its own behalf and on behalf of public welfare and safety and in order to promote the security and convenience of the public and to provide adequate facilities to the public to require the Power Company, at its expease, to make such additions, extensions, repairs or improvements to or changes in its existing operations, plant, equipment, apparatus, facilities or physical property, or to erect such new structure or structures at its expense as ought reasonably to be made to prevent the current from the power lines of the Power Company from interfering with the train stop system

owned and operated by complainant on its right-of-way between Champaign and Branch Junction, Illinois.

The Power Company on September 28, 1953, filed with this Commission its answer to the complaint, alleging that: throughout the period beginning prior to the year 1922 and continuing to the present, the Power Company has owned and operated electric public utility transmission and distribution lines on right-of-way owned by it adjacent to the right-of-way of the Railroad Company; that throughout said period each of said lines has been constructed and has been maintained and operated in compliance with the rules, regulations and orders of this Commission and in accord with generally recognized methods, practices and standards of the electric utility industry; that the Power Company has at no time exceeded its rights and authority in the construction, maintenance or operation of its said lines and has been guilty of no negligent construction, maintenance or operation thereof; that from the effective date of the Public Utilities Act in 1914 to and including the present time, there has been a substantial and steady growth in the uses and needs of the public for electric public utility service; that throughout the period beginning with the installation of the Railroad Company's train stop system to and including the present time, the only changes in either construction or operation of the electric lines of the Power Company complained of by the Railroad Company have been those made necessary for the transmission of additional quantities of electric energy required to meet the increasing demands for electric public utility service, and that all of such construction and operation has been at all times in accordance with proper and well established practices and has been and now is in accordance with the rules, regulations and orders of this Commission; that throughout the period from 1913 to and including the present time, the Power Company

has supplied electric energy, generated, transmitted and distributed by it over the lines in question at a frequency of 60 cycles per second; that the transmission and distribution of electric energy at said frequency has been and continues to be an established and approved practice of electric public utilities in the State of Illinois and the United States, and that whatever effect, if any, the transmission and distribution of electric energy by the Power Company may have on the Railroad Company's train stop system arises from the fact that the Railroad Company operates its train stop system at the same 60 cycle frequency at which the Power Company operates, and at all times has operated, its lines.

The Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen & Enginemen, the Order of Railway Conductors and the Brotherhood of Railroad Trainmen, unincorporated associations whose members consist largely of railroad train operating employees and representing such employees on the Railroad Company, prayed leave to intervene, which was granted. As grounds for intervention these organizations alleged that the continued leakage or false flow of the electrical energy from the plant and/or facilities of the Power Company into the train stop system of the Railroad Company creates an operating hazard which could be disastrous to the health and safety of the employees, passengers, customers and the public in operating trains in the area in question. The spokesman for this group stated that had not the railroad filed this complaint the labor organizations would have filed a complaint against the Railroad Company and the Power Company.

Pursuant to notice as required by law and by the rules and regulations of the Commission, the taking of evidence was begun before a duly qualified Examiner of the Com-

mission on October 7, 1953. Thereafter hearings were held from time to time until the record was closed on June 10, 1954. The parties, including the intervenors, appeared and were represented at all hearings and evidence in the form of exhibits and oral testimony was presented. During the course of the hearings it became evident that the parties were in agreement as to the best engineering solution to the problem and it further became evident that this Commission should take some immediate action to expedite the solution; accordingly, an interim order was entered requiring the Railroad Company, without prejudice to the parties, to forthwith take immediate steps to change its automatic train stop system so that it would operate on a frequency of 100 cycles per second rather than 60 cycles per second. This interim order is discussed more at length later in this order. The record includes more than 1600 pages of testimony and 147 exhibits.

II.

Description of Facilities Involved.

Railroad Company Facilities. Included within the mileage operated by the Railroad Company in the State of Illinois on its privately owned right-of-way is a line of railroad approximately 121.8 miles in length constructed in 1856, now double track and extending from Champaign to Branch Junction, Illinois, over which the Railroad Company operates daily approximately 35 freight trains and 12 regularly scheduled passenger trains. The maximum allowable speeds for passenger trains is 100 miles per hour and for freight trains 50 to 60 miles per hour, dependent upon the type of train. In 1952 on ten of these regularly scheduled passenger trains the Railroad Company handled 776,526 passengers over this territory. Since January 21,

1926, the train movements over this line have been controlled by a continuous inductive automatic train stop system with cab signals utilizing 60 cycle alternating current installed and operated pursuant to an order of the Interstate Commerce Commission in Docket No. I. C. C. 13413.[1] Said train stop system was constructed and has at all times been operated and maintained by the Railroad Company in conformity with the order and requirements of the Interstate Commerce Commission.[2]

The track rails in the territory are utilized to carry the electric current necessary to operate both the track circuits and the train stop equipment on the engines. The track circuits are the controlling circuits and operate by direct current supplied by batteries kept in housings along the right-of-way. 60 cycle alternating current for operation of the train stop and cab signals is superimposed upon the direct current track circuit and is controlled by the direct current relays. The alternating current is received from the Power Company at 2300 volts 60 cycles and reduced to 550 volts 60 cycles. At approximately 10,000 feet intervals this voltage is further reduced to approximately 6 volts and fed into the rails at the entrance end of each block section. In addition to the regular supply of power, emergency power is also available and is automatically provided in the event of power failure of the normal sources of supply.

The locomotive equipment consists of a receiver for picking up the alternating current signal from the track rails, various electrical equipment, a color-light cab signal which shows a green light when authorized speed is per-

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[1] In the Matter of Automatic Train-Control Devices, 60 I. C. C. 238.

[2] In the Matter of Automatic Train-Control Devices, 115 I. C. C. 250.

missible and a red light when speed must be restricted or a stop is indicated, an acknowledging valve to forestall automatic brake application and various automatic braking equipment including a whistle which provides audible warning that an automatic brake application is imminent.

Under normal operation the current from the train stop supply source feeds toward the locomotive down one rail past one pickup coil on the receiver, through the locomotive axle and past the other pickup coil, and thence back to the source of supply. The voltages induced in the coils energize the electrical apparatus in the locomotive causing a green signal to be shown in the cab indicating the track ahead is clear of obstructions and is satisfactory for normal operation. If the track ahead is not free of obstructions or is otherwise unsatisfactory for normal operation, the alternating current in the rails is removed so that the locomotive train stop equipment receives no energy. This results in a visual red signal and an accompanying audible warning whistle indicating to the engineer that there is a condition ahead requiring controlled speed and that an automatic brake application will occur unless the engineer forestalls such action by operating an acknowledgment valve. If the engineer forestalls the automatic brake application by operating the acknowledgment valve, he may proceed at restricted speed with the red cab signal as a caution indication. If an automatic brake application has been initiated and the signal thereafter changes to green, the engineer may close the brake valve causing the brakes to release after a period of from three to nine seconds.

This equipment conforms with the requirements of the Interstate Commerce Commission and is in accord with generally recognized methods, practices and standards for providing safe signal operations in the railroad industry.

Power Company Facilities. The Power Company facilities include various transmission and distribution lines paralleling the Railroad Company's right-of-way at varying distances and, at places, crossing the Railroad Company's right-of-way.

The transmission line extending from Tolono to Tuscola was originally constructed in 1915 as a "Y" connected unigrounded circuit energized at 8 KV. In 1925 the line was changed from 8 KV to 7.2 KV delta. In 1927 it was extended northward to Savoy and in 1950 the voltage of the entire line was increased from 7.2 KV delta to a 7.2/12.5 KV "Y" unigrounded.

The transmission line extending from Tuscola to Mattoon was originally constructed in 1913; in 1925 a 7.2/12.5 KV "Y" connected multigrounded circuit was added from Arcola to Galton and in 1927 a 7.2 KV delta connected circuit was added from Mattoon to Dorans.

The transmission line extending from Mattoon to Neoga was originally constructed in 1913 and energized as a 34.5 KV line. In 1917 it was extended from Neoga to Effingham. In 1936 this line was rebuilt and the voltage increased from 34.5 KV to 69 KV and the circuit design changed from a delta to a multigrounded "Y." In 1927 a 7.2 KV delta connected circuit was added to the pole line between Mattoon and Neoga and a 7.2/12.5 KV "Y" connected multigrounded circuit added to the line between Effingham and Sigel. In 1938 a single phase 2.4 KV circuit was added to the pole line for a distance of approximately 2.2 miles south of Neoga. In 1953 there was added to the pole line a 7.2 KV single phase circuit for a distance of approximately 5 miles north from Sigel.

The transmission line south of Effingham and west of the Railroad Company was originally constructed in 1927 as a

69 KV multigrounded "Y" circuit. In 1927 there was added to this pole line a 7.2/12.5 KV "Y" connected multigrounded circuit. In 1950 the line was reconstructed and a 34.5 KV "Y" connected unigrounded circuit added to the pole line. At the same time the 7.2/12.5 KV line was replaced by a 2.4/4.16 KV "Y" connected multigrounded circuit.

The transmission line between Mason and Kinmundy was constructed in 1927 and in 1930 it was extended from Kinmundy to Alma. In 1931 the entire line between Mason and Alma was changed from a multigrounded system to a unigrounded system. In 1946 the entire line was changed back to a multigrounded system.

Exclusive of distribution lines in towns traversed by the Railroad Company, the Power Company presently has a total of approximately 82 miles of transmission line parallel to the railroad. Of this total 58 miles of parallel lines were constructed prior to 1924 and have been in continuous operation since that time. The Power Company supplies electrical energy at frequencies of 25 and 60 cycles per second, although all of the lines along the right-of-way of the Railroad Company are operated at a frequency of 60 cycles. In the construction of its transmission and distribution lines it employs the following types of circuit design:

3-wire multigrounded circuit, 4-wire multigrounded circuit, unigrounded circuit and delta circuit.

On the 58 miles of lines parallel to the railroad, owned by the Power Company, in 1924 there were 61 circuit miles of line. These 61 circuit miles were broken down as follows:

.6 miles of 4.6 KV single phase two-wire line;

1.6 miles of 6.9 KV 3-wire ungrounded line, fed from delta connected transformer stations;

13.3 miles of 8 KV 3-wire unigrounded line, fed from "Y" connected transformer stations;

21.9 miles of 34.5 KV 3-wire unigrounded line, fed from delta connected transformer stations;

23.6 miles of 34.5 KV 3-wire unigrounded line, fed from "Y" connected transformer stations.

In 1953 the Power Company had 113.5 circuit miles of line parallel to the Railroad Company which are broken down as follows:

7.2 miles of 2-wire single phase 2.4 and 7.2 KV lines; the 2.4 KV lines are ungrounded and the 7.2 lines are multigrounded;

12.5 miles of 7.2 KV 3-wire ungrounded line, fed from delta connected transformer stations;

14 miles of 7.2/12.5 KV 4-wire unigrounded line, fed from "Y" connected transformer stations;

33.4 miles of 7.2/12.5 KV 4-wire multigrounded line, fed from "Y" connected transformer stations;

21.9 miles of 34.5 KV 3-wire unigrounded line, fed from delta connected transformer stations;

1.1 miles of 34.5 3-wire unigrounded line, fed from "Y" connected transformer stations;

23 miles of 69 KV 3-wire multigrounded line, fed from "Y" connected transformer stations;

.4 mile of 69 KV 4-wire multigrounded line, fed from "Y" connected transformer stations.

The circuit designs of the Power Company in general conform with the requirements of this Commission and are in accord with generally recognized methods, practices and standards for transmitting electrical energy in the power industry.

III.

Illinois Statutes and Illinois Commerce Commission General Orders Involved.

Section 32 of the Public Utilities Act (Chap. 111-2/3, Illinois Revised Statutes, 1953, Sec. 32) provides, in part:

> "Every public utility shall furnish, provide and maintain such service instrumentalities, equipment and facilities as shall promote the safety, health, comfort and convenience of its patrons, employees, and public and as shall be in all respects adequate, efficient, just and reasonable."

Section 49 of the Public Utilities Act (Chap. 111-2/3, Illinois Revised Statutes, 1953, Sec. 49) provides:

> "Whenever the Commission, after a hearing had upon its own motion or upon complaint, shall find that the rules, regulations, practices, equipment, appliances, facilities or service of any public utility, or the methods of manufacture, distribution, transmission, storage or supply employed by it, are unjust, unreasonable, unsafe, improper, inadequate or insufficient, the Commission shall determine the just, reasonable, safe, proper, adequate or sufficient rules, regulations, practices, equipment, appliances, facilities, service or methods to be observed, furnished, constructed, enforced or employed and it shall fix the same by its order, decision, rule or regulation. The Commission shall prescribe rules and regulations for the performance of any service or the furnishing of any commodity of the character furnished or supplied by any public utility."

Section 50 of the Public Utilities Act (Chap. 111-2/3, Illinois Revised Statutes, 1953, Sec. 50) provides:

Order of Illinois Commerce Commission of Oct. 26, 1954

"Whenever the Commission, after a hearing had upon its own motion or upon complaint, shall find that additions, extensions, repairs or improvements to, or changes in, the existing plant, equipment, apparatus, facilities or other physical property of any public utility or of any two or more public utilities ought reasonably to be made, or that a new structure or structures should be erected, to promote the security or convenience of its employees or the public, or in any other way to secure adequate service or facilities, the Commission shall make and serve an order, directing that such additions, extensions, repairs, improvements or changes be made, or such structure or structures be erected in the manner and within the time specified in said order. If any additions, extensions, repairs, improvements or changes, or any new structure or structures which the Commission has ordered to be erected, require joint action by two or more public utilities, the Commission shall notify the said public utilities that such additions, extensions, repairs, improvements or changes or new structure or structures have been ordered and that the same shall be made at the joint cost whereupon the said public utilities shall have such reasonable time as the Commission may grant within which to agree upon the apportionment or division of cost of such additions, extensions, repairs, improvements or changes or new structure or structures, which each shall bear. If at the expiration of such time such public utilities shall fail to file with the Commission a statement that an agreement has been made for a division or apportionment of the cost or expense of such additions, extensions, repairs, improvements or changes, or new structure or structures, the Commission shall have authority, after further hearing, to make an order fixing the proportion of

such cost or expense to be borne by each public utility and the manner in which the same shall be paid or secured."

Section 57 of the Public Utilities Act (Chap. 111-2/3, Illinois Revised Statutes, 1953, Sec. 61) provides, in part:

"The Commission shall have power, after a hearing and upon its own motion, or upon complaint, by general or special orders, rules or regulations, or otherwise, to require every public utility to maintain and operate its plant, equipment or other property in such manner as to promote and safeguard the health and safety of its employees, passengers, customers, and the public, and to this end to prescribe, among other things, the installation, use, maintenance and operation of appropriate safety or other devices or appliances, including interlocking and other protective devices at grade crossings or junctions and block or other systems of signaling, to establish uniform or other standards of equipment, and to require the performance of any other act which the health or safety of its employees, passengers, customers or the public may demand."

Section 55 of the Public Utilities Act (Chap. 111-2/3, Illinois Revised Statutes, 1953, Sec. 51) provides, in part:

"**Certificate of convenience and necessity—Alteration.** No public utility shall begin the construction of any new plant, equipment, property or facility, which is not in substitution of any existing plant, equipment, property or facility or in extension thereof or in addition thereto, unless and until it shall have obtained from the Commission a certificate that public convenience and necessity require such construction.

"No public utility not owning any city or village franchise nor engaged in performing any public service

or in furnishing any product or commodity within this state and not possessing a certificate of public convenience and necessity from the State Public Utilities Commission or the Public Utilities Commission, at the time this Act goes into effect shall transact any business in this State until it shall have obtained a certificate from the Commission that public convenience and necessity require the transaction of such business."

Illinois Commerce Commission General Order 115 (effective August 1, 1927, to May 1, 1947, provides in part:

Section 101. **Scope and Application.**—These rules and regulations shall apply to new construction or reconstruction of all overhead power and communication lines which come within the jurisdiction of the Commission. Where existing construction is inadequate plans shall be instituted which will eliminate all the features not in substantial agreement with these rules as expeditiously as practicable. If in its opinion public interest requires it the Commission may order the reconstruction or alteration of existing lines.

These rules are in general minimum requirements and it is intended that greater strength or clearance shall be provided where conditions warrant.

The requirements specified herein shall not relieve any public utility of any statutory requirement.

Section 102. **Co-operation and Advance Notice.** In order that full benefit may be derived from these rules and in order to facilitate their proper application, all utilities between whose facilities coordination may now or later be necessary, shall observe the following co-operative practices:

(a) Each utility shall give to other utilities in the same general territory advance notice of any con-

struction or change in construction or in operating conditions of its facilities concerned or likely to be concerned, in situations of proximity, provided, however, that the requirements of this rule shall not apply in case of routine extensions or minor changes in the local distribution facilities of either power or communication systems.

(b) If it appears to any utility concerned that further consideration is necessary, the utilities shall confer and co-operate to secure co-ordination in accordance with the rules set forth herein.

(c) To assist in promoting conformity with these rules, an arrangement should be set up between all utilities whose facilities may occupy the same general territory, providing for the interchange of pertinent data and information including that relative to proposed and existing construction and changes in operating conditions concerned or likely to be concerned in situations of proximity.

Section 108. **Rules for Inductive Co-ordination.**— While these rules are not intended to cover inductive co-ordination, 102 requiring co-operation and advance notice where co-ordination may be necessary, shall also apply in situations involving consideration of inductive co-ordination.

Although specific rules covering inductive co-ordination are not adopted at this time, the Commission retains full jurisdiction of the matters of location, design, construction, operation and maintenance of power and communication lines where consideration of these or other conditions may be necessary for the prevention or elimination of inductive interference.

Illinois Commerce Commission General Order 160 (effective May 1, 1947 to date) provides in part:

1. **Scope and Application**—These rules and regulations shall apply to new construction or reconstruction of all power and communication lines which come within the jurisdiction of the Commission. Where existing construction is inadequate plans shall be instituted which will eliminate all the features not in substantial agreement with these rules as expeditiously as practicable. If in its opinion public interest requires it the Commission may order the reconstruction or alteration of existing lines.

These rules are in general minimum requirements and it is intended that greater strength or clearance shall be provided where conditions warrant.

The requirements specified herein shall not relieve any public utility of any statutory requirement, such as securing the right, authority, easement, or permission to locate and maintain the facilities proposed.

2. **Certificate of Convenience and Necessity**—All applications for a Certificate of Convenience and Necessity to construct, operate and maintain a power line or a communication line shall be accompanied by a plat showing:

(a) The location of the proposed line for its entire length;

(b) The location of communication lines, power lines and railroad tracks crossed by the proposed line;

(c) The location of all other communication and power lines within a distance of 200 feet; and

(d) The names of the organizations owning or operating the lines crossed or paralleled.

Notice of the filing of the application for a Certificate of Convenience and Necessity to construct, operate and maintain a power line or communication line shall be given by the applicant to all other utilities

whose communication or power lines are crossed or paralleled and to all utilities whose railroad tracks are crossed. The applicant shall include in the application a list of names and addresses of the other utilities to which such notices are sent.

3. **Advance Notice and Co-operation**—In order that full benefit may be derived from these rules and in order to facilitate their proper application, all utilities between whose facilities co-ordination may now or later be necessary, shall observe the following co-operative practices:

3.1 **Advance Notice**—Each utility shall give to other utilities in the same general territory advance notice of any construction or change in construction or in operating conditions of its facilities concerned or likely to be concerned, in situations of proximity, provided, however, that the requirements of this rule shall not apply in case of routine extensions or minor changes in the local distribution facilities of either power or communication systems.

10. **Rules for Inductive Co-ordination**—While these rules are not intended to cover inductive co-ordination, rule 3 requiring co-operation and advance notice where co-ordination may be necessary shall also apply in situations involving consideration of inductive co-ordination.

Although specific rules covering inductive co-ordination are not adopted at this time, the Commission retains full jurisdiction of the matters of location, design, construction, operation and maintenance of power and communication lines where consideration of these or other conditions may be necessary for the prevention or elimination of inductive interference.

IV.

Evidence in the case.

The railroad facilities heretofore described were completed and placed in service by the Railroad Company on January 21, 1926, pursuant to an order of the Interstate Commerce Commission in Docket No. I. C. C. 13413. After the facilities were installed they were inspected and approved by the Interstate Commission by order dated August 11, 1926, in Docket No. I. C. C. 13413 (Sub. No. 20). The Interstate Commerce Commission in its order approving the installation observed that foreign current, if present, could cause interference with the train stop system.

Prior to the installation of the automatic train stop system the Railroad Company made extensive studies and tests to determine if this system would meet the requirements of the railroad and operate without interference from outside sources. These tests, which included the operation of a locomotive equipped to detect the presence of foreign current, showed that there was no detectable foreign current at any place in the territory. After the automatic train stop system was placed in service it continued to operate in a satisfactory manner until 1948 when the Railroad Company began to experience interference with that signal system as a result of foreign current, i. e., current from sources outside the control of the Railroad Company. This interference, which was first experienced at Sigel, Illinois, later became evident and more pronounced at other locations on the Railroad Company's line of railroad between Champaign and Branch Junction, Illinois, until, at the end of the filing of the complaint herein, interference was being experienced with regularity in the areas of Tolono, Hayes, Mattoon, Etna, Neoga, Effingham and Edgewood.

Order of Illinois Commerce Commission of Oct. 26, 1951

When the interference is of sufficient magnitude its effect is to cause a false green cab signal in steam locomotives (which have so-called one-channel type equipment) and to cause false red cab signals in the Diesel locomotives (which have so-called two-channel type of equipment). These false signals are extremely hazardous to the public and to train personnel, because false green cab signals displayed when red signals should be displayed permit the engineers to proceed at authorized speed with the track ahead occupied or otherwise obstructed, a switch not aligned for main line movement, a broken rail or some other condition present which might lead to a collision or a derailment. False red cab signals are also dangerous in that they require continuous acknowledgements on the part of the engineer which may result in the air reservoir becoming exhausted which, in turn, causes an automatic brake application. On slow moving freight trains such an automatic brake application can and has resulted in injury to operating employees and could cause the train to derail. In addition, false restrictive indications cause serious delays to train movements and interfere with the schedules of both passenger and freight travel. Further, because the false restrictive indications are received with regularity in certain areas, there is the danger that the engineers, assuming the restrictive signals in these areas are from foreign current, may ignore the signals or fail to respond promptly to them. In addition, it is impossible for operating personnel to have complete confidence in a system which does not operate with maximum efficiency as it is impossible to anticipate where false signals will next appear. The most dangerous aspect of the false signal indications is that they are more prevalent in damp, wet ~~and foggy~~ weather, the time when proper signal indications are most necessary.

Immediately after interference was experienced at Sigel, Illinois, the Railroad Company made tests which showed that in the presence of a sufficient amount of foreign current the one channel type of equipment then in service on the locomotives would give a false green signal. As it was known that two channel locomotive equipment would produce a false restrictive signal rather than a false clear signal in the presence of foreign current, all Diesel passenger locomotives were converted to the two channel type of equipment. Steam locomotive equipment was not changed to the two channel type because foreign current in the rails often causes a flickering restrictive cab signal, resulting in an automatic brake application which is extremely dangerous to train personnel in the rear of a slow moving freight train and could result in the buckling or derailment of such a train.

As soon as the first false signal indications were received on the automatic train stop system of the Railroad Company at Sigel in 1948, all Railroad Company equipment was immediately checked for defects. None being found, the current in the rails was checked and it was discovered that foreign current was present in considerable quantities. Joint tests of the Power Company and the Railroad Company showed the foreign current was escaping from one of the power lines of the Power Company due to defective insulators. When the defective insulators were replaced the interference problem in this area was corrected for a short time. However, while the Sigel tests were being made the Railroad Company experienced false signal indications in the vicinity of Effingham. Joint tests again showed the source of the foreign current which caused the false signal indications was the Power Company's lines which paralleled and crossed the Railroad Company's tracks in that vicinity. When the grounds on this line were removed the false

signal indications disappeared. Following the false signal indications at Effingham the same trouble began to be experienced near Edgewood. In view of the seriousness of the problem the Railroad Company made tests throughout the length of the train stop system to determine where interference might be expected, the source of the foreign current causing the interference and what steps could be taken to correct the situation. As a result of these tests it was found that interference from foreign current was prevalent in the areas heretofore mentioned.

After foreign current was first detected similar joint tests by the Power Company and the Railroad Company were made in each of the areas to determine the source of the foreign current. In each instance the normal train stop energy was removed from the rails of the Railroad Company so that only foreign current would be indicated on an instrument attached to the rails. After this was done the paralleling power lines of the Power Company were de-energized with the result that in each instance the foreign current in the rails disappeared, indicating the source of the foreign current was the nearby lines of the Power Company.

The Railroad Company next made tests to determine whether the foreign current was reaching its rails primarily through the air (induction) or through the ground (conduction). These tests consisted of measurements of the current in the rail and measurements of current of an ungrounded circuit in a position similar to that of the receiver coils on the locomotives. The tests were made with a railammeter and a field strength meter. The railammeter is an instrument commonly employed in the railroad industry and registers only the presence of current in the rail. The field strength meter consists of a receiver coil and core similar to those used on the train stop equip-

ment on the locomotives which are connected to the input stage of an electric sound level amplifier, the output of which is read on a meter scale calibrated in decibles.

On the basis of the results of tests made with these instruments and subsequent tests, it was the opinion of experts for the Railroad Company that the interfering current from the Power Company was reaching the rails of the Railroad Company primarily through the ground or by conduction in the areas of Tolono, Hayes, Mattoon, Effingham and Edgewood, and that the interfering current was reaching the rails of the Railroad Company and the coils of the locomotives primarily through the air or by induction, in the areas of Etna and Neoga. In the latter two areas the lines of the Power Company are much closer to the rails of the railroad.

These experts further testified that this opinion was strengthened by the fact that the effect of induction on the rails of the Railroad Company would be fairly uniform throughout the length of the exposure and as the foreign current in the rails is decidedly variable throughout the length of the exposure (being present at some places and not present at others), foreign current would be reaching the rails by conduction rather than induction. Exhibits were also introduced in evidence which indicated the Power Company recognized that ground currents from its lines were interfering with the Railroad Company's train stop system.

It was also the undisputed opinion of the experts for the complainant that the Railroad Company had employed every practicable measure to counteract the effect of, and to prevent interference from, foreign current from the transmission and distribution lines of the Power Company short of changing certain basic features of the signal system. To change these basic features of the signal sys-

tem so as to eliminate the foreign current interference would cost approximately $165,000.

The interference caused by the foreign current from the lines of the Power Company has been increasing in intensity and in geographical extent since first detected in 1948; the foreign current in known areas has increased in volume and foreign current has been found in many new areas since it was first discovered. In the opinion of experts for the Railroad Company the interference and the continued growth of interference from foreign current is due to the great increase in load carried by the transmission and distribution lines of the Power Company and the increased use of multi-grounded lines. The Power Company's average yearly sales since 1946 per residential customer have increased from approximately 990 kwh. to over 1900 kwh. in 1953. This increase is almost double the national average.

Engineers operating trains in these areas testified that they now experience what are known to be false signal indications on every trip. They also testified that the false signal indications increased in number and duration during inclement weather when proper signals are most necessary.

Ever since the Railroad Company found foreign current from the power lines in its automatic train stop system it has endeavored to work out a solution to the problem with the Power Company. Joint meetings and tests have been inaugurated and the Power Company at the request of the Railroad Company installed sucker transformers near LaClede to limit the amount of current straying from its lines and flowing in the earth. This installation relieved the situation for a time, but interference is again being experienced near LaClede by the Railroad Company. All subsequent efforts on the part of the Railroad Com-

pany and the Power Company to correct the conditions complained of have been unsuccessful.

In the opinion of the experts for the Railroad Company much of the foreign current reaching the rails of the Railroad Company and causing the interference with the automatic train stop system was due to the widespread use by the Power Company of multi-grounded transmission and distribution lines. Multi-grounded lines permit a part of the current which should flow in the neutral wire to flow in the earth instead of confining the flow to the wires of the Power Company. Accordingly it was their opinion that most of the interference problem could be solved by the conversion of Power Company multi-grounded lines to a delta type of circuit. In addition, Railroad Company experts testified the Power Company could eliminate the interference caused by foreign current from its lines by utilizing one or more of the following methods: (a) moving the power lines away from the railroad, (b) employing adequate transpositions, (c) reducing the loads on given power lines and building additional lines away from the railroad to handle increased need for power, (d) use of ungrounded multi-conductor cable instead of open wire, and (e) installing larger wires containing more copper on existing lines.

The Railroad Company, however, recognized that the best engineering solution, i. e., the solution which would be used if both properties were owned by one company, is to convert its automatic train stop system so that it will operate at a frequency of 100 cycles per second instead of 60 cycles per second.

Evidence was also introduced as to the provisions of the "Report of Joint General Committee of Association of American Railroads and Edison Electric Institute on the Inductive Coordination of Electrical Supply and Com-

munication System" of which associations both the Railroad Company and the Power Company are members. These reports set forth suggested procedures and practices to be followed in the amicable settlement of inductive coordination problems between the two industries. Evidence was further introduced as to the solution reached under these reports for similar situations between the Railroad Company and other electric utilities.

On rebuttal Complainant showed induction alone will cause little, if any, interference even though two 60 cycle systems are operated in close proximity to each other. The Railroad Company's Assistant Chief Engineer testified that on the Chicago Terminal the Railroad operates 101 track miles of signal system of a sensitivity equivalent to the automatic train stop system, utilizing 60 cycle rail current (as it does between Champaign and Branch Junction) directly beneath four-wire 4000/2300 volt unigrounded lines, most of which carry in excess of 100 amperes per phase. The reason there is no interference must be due to the fact the 60 cycle transmission lines are well balanced and unigrounded.

Additional evidence was also introduced as to the Delaware, Lackawana & Western (D. L. & W.) tests which were made with respect to the question of the effect of interference of 60 cycle transmission lines on a 60 cycle automatic train stop system. The published report of the results of these tests shows:

> (a) When five amperes of current are introduced into the ground from a power line near a train stop system, interference from foreign current can be expected in a 60 cycle system under unfavorable weather conditions.
>
> (b) That as much as fifteen times the current or 75 amperes can be carried by the same power line, pro-

viding none of it is introduced into the earth, without causing interference with the train stop system under the same weather conditions.

and indicate that if the current from a paralleling power line is kept out of the earth the automatic train stop system will experience little, if any, interference from the paralleling power line.

Evidence was also introduced as to tests that had been made subsequent to the filing of the Complaint. These tests were designed to show (a) that the methods used by both the Railroad Company and the Power Company for measuring the strength of magnetic fields was essentially the same although different instruments were employed, (b) that tests made in the field away from the rails of the Railroad Company would not be the same as those made in the vicinity of the rails, and (c) that to reach a valid conclusion factual data must be used in each part of a given test rather than assumed data. In tests made by the Power Company an assumed value of 100 meter-ohms was used as the earth-resistivity. Actual tests made by the Railroad Company showed earth-resistivity in this area to be 43 meter-ohms, which actual figure was used by the railroad in its tests.

Evidence was further introduced to show that in the areas of Tolono and Hayes the interference caused by the Power Company's paralleling lines with the Railroad Company's automatic train stop system disappeared when the Power Company removed an additional ground or grounds which had been found on those alleged ungrounded lines. The effect of the removal of the additional ground or grounds was to prevent current from reaching the rails of the Railroad Company by means of conduction although the inductive effect would still be present.

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The facilities of the Power Company heretofore described were identified. Of the existing circuit miles of transmission or distribution lines paralled to the Railroad Company approximately 54% were constructed prior to 1926. The Power Company contended authority was obtained from this Commission either under the Grandfather Clause or otherwise for the construction or changes in all of its lines and showed authority for: the construction of the transmission line from Tuscola to Tolono and its subsequent extension to Savoy in 1927; the construction of the 34.5 KV transmission line from Tuscola to Mattoon; the conversion of the line from Tuscola to Savoy from 7.2 KV delta to 7.2/12.5 KV "Y" unigrounded; the increase of the distribution system in the City of Mattoon from 2.3 KV delta to 2.3/4.0 KV "Y" multi-grounded; the construction of the transmission line from Mattoon to Neoga and construction of the transmission line from Neoga to Effingham; the increase and reconstruction of the line from Mattoon to Effingham in 1936 from 33 KV to 66 KV; the construction of the transmission line from Mason to Kinmundy; and the extension of the later line from Kinmundy to Alma in 1939.

On cross-examination it was developed that no authority was obtained for: the construction of the 7.2 KV delta line from Mattoon to Dorans; the construction of the 7.2/12.5 KV "Y" connected multi-grounded transmission line from Arcola to Gaiton; the construction of a 7.2 KV circuit on the line from Mattoon to Neoga in 1927; the construction of the 7.2 KV single phase multi-grounded line extending five miles north from Sigel; the construction of the 2.4 KV single phase line from Neoga 2.2 miles south; the construction of the 34.5 KV line extending to the new substation west of Mattoon; the construction of the 7.2/12.5 KV "Y" connected multi-grounded circuit from Effingham to Sigel; changing the Tuscola to Tolono line from

an 8 KV "Y" unigrounded circuit to a 7.2 KV delta circuit; changing the 7.2 12.5 KV line immediately south of Effingham to a 2.4 4.16 line; changing the Mason to Alma line from a unigrounded circuit to a multi-grounded circuit; and changing the Mattoon to Effingham line from a delta to a multi-grounded circuit.

Although the circuit miles of line parallel to the Railroad Company increased only 86.07% (from 61 to 113.5 miles) in the period 1924-1953, the load carried by all of the Power Company lines, as evidenced by the total annual kilowatt-hour sales for the Power Company, increased 1132.00% (from 125,000,000 kwh. to 1,540,000,000 kwh.).

Evidence was further introduced to show that 60 cycles is the standard frequency for the majority of all electric light and power systems in the United States and that the Power Company utilizes circuit types generally recognized and in use throughout the industry. Evidence was further introduced to show that the Power Company maintains its lines in good condition and in conformity to General Order 160 of this Commission.

In the opinion of Power Company witnesses the methods which the Railroad Company had suggested for eliminating interference with the automatic train stop system by changing the Power Company's facilities were not practical because of the excessive cost involved. It was estimated that the total cost of moving parallel lines in rural areas away from the railroad would amount to $1,873,700.00 with an estimated plant loss due to early retirement of $305,400.00. The estimated cost of replacing all parallel lines in rural areas and lines within one thousand feet of the railroad in urban areas with multi-conductor cable was $8,000,000. It was the further opinion of witnesses for the Power Company that the best engineering solution to the problem created by the interference caused by the

Power Company's current reaching the rails of the Railroad Company's automatic train stop system is to convert the signal system from 60 cycles per second to 100 cycles per second.

Power Company witnesses testified that the purpose of grounding electrical lines is to protect users and utilization equipment against a voltage higher than that for which the circuit is designed or to limit the maximum voltage to ground which may appear on a circuit. To provide adequate protection to electrical equipment from lightning discharge, lightning arrestors and grounds must be provided to allow the lightning to reach the earth without damage to the equipment. The inter-connection of grounds gives the greatest effective protection to all facilities. One of the Power Company's witnesses testified that in the 1920's the practice of using multi-grounded transmission systems was started on an extensive scale and that power companies generally have converted delta circuits to multi-grounded "Y" circuits. Multi-grounded "Y" circuits permit a part of the current carried in the neutral wire to flow in the ground although grounding is not primarily for that purpose. It was estimated that as much as 50% of the current carried by the neutral wire might flow through the ground and that as it is practically impossible to completely balance the load between phase wires of a three-phase system some current from such a multi-grounded circuit must flow in the earth. It was the further opinion of the Power Company's expert witnesses that it was unlikely this earth current would reach the rails of the Railroad Company's train stop system but that because the Railroad's train stop system was extremely susceptible, it was possible.

The Power Company further introduced evidence as to the provisions of the so-called principles and practices

published as the "Reports of the Joint General Committee of Association of American Railroads and Edison Electric Institute on the Inductive Coordination of Electrical Supply and Communication Systems" dated October 7, 1936. This was recognized as a generally accepted basis for the solution of the inductive problems.

The principal factors to be considered in an inductive coordination problem were stated as: (1) the influence of the power system (the effect of current in the transmission or distribution lines upon adjacent facilities), (2) the susceptiveness of the communication system (the extent to which facilities such as rails are capable of being adversely effected by the currents from paralleling Power Company lines), and (3) coupling between the two systems (the inter-relation of the major or paralleling circuits by induction, by conduction or by a combination of the two).

One of the expert witnesses for the Power Company stated that, in his opinion, conductive coupling was not an important factor and would not account for the foreign current found in the rails of the Railroad Company. This opinion was based upon a formulated family of curves developed by Professor Carson. An expert witness for the Power Company testified that he was familiar with and participated in the so-called D. L. & W. tests and that in his opinion they showed that a 60 cycle automatic train stop system was so susceptive to interference from paralleling 60 cycle transmission lines that it could not be utilized in close proximity thereto. He further testified that some other railroads that had initially installed 60 cycle systems had changed to 100 cycles and that another method of overcoming the susceptiveness of such a system would be to code the 60 cycle automatic train stop system. However, coding the 60 cycle frequency is not considered practicable in this case.

Another expert for the Power Company testified that he had made tests at various places along the right-of-way of the Railroad Company and that the results of the tests, in his opinion, showed the foreign rail currents were due primarily to magnetic induction producing a 60 cycle potential in the rails. It was his further opinion that this induced potential only caused a flow of current because leakage paths existed from rail to earth through the ballast and ties on the railroad. He further testified that grounded rail circuits could not in his opinion be used as a path of a signal system which was sensitive to 60 cycle current. It was also his opinion that the Railroad Company did not experience trouble from the Power Company's lines until 1948 because it was not until then that two-channel train stop equipment was placed in service, which equipment was more susceptive to induced foreign rail current than was the single-channel type.

Various witnesses for the Power Company testified that the tests made by the Railroad Company witnesses with a field strength meter would not indicate whether the interference was caused by conduction or by induction. To support this position Power Company witnesses relied upon results of tests which they had made in the field.

Evidence was further introduced to show that the Power Company's transmission and distribution lines were balanced within practical limits for good power system operation and to show the load growth on the lines of the Power Company for the year 1923 to and including the year 1952. The Power Company also offered exhibits showing the signal failures reported to the Interstate Commerce Commission by the Railroad Company.

V.

Conclusions.

On the basis of all of the evidence in this case and the exhibits submitted in support thereof, the Commission has concluded that the interference experienced by the Railroad Company with its automatic train stop system is caused primarily by foreign current emanating from transmission and distribution lines owned and operated by the Power Company. The question germane to the Commission's duty is whether the two companies can exist in their present location and perform public services under grant of the laws of this State with due regard to public efficiency and the safety of persons and property. It is clear existing conditions should in some manner be corrected as they constitute a public hazard. In matters of this kind the Commission believes best results are to be secured by cooperation between the parties whose lines are involved and feels that the parties should agree on some solution to the end that both systems shall be designed, located, constructed, operated and maintained in a manner which will prevent or eliminate interference. In this case the parties have agreed on the best engineering solution which is reflected in the interim order entered by the Commission on March 9, 1954, but there is an absence of evidence regarding the sharing of the cost of such action. This interim order was entered after all direct evidence had been put into the record and it clearly appeared that the Railroad Company and the Power Company, as well as one of the experts for this Commission and other outside experts, were of the opinion that the best engineering solution, regardless of the legal liability for the interference, was to change the Railroad Company's automatic train stop system so that it would operate at a frequency of 100 cycles per second instead of at a frequency of 60 cycles per

second. Because the evidence showed the time involved in making such a change was substantial and in order to promote the security of the public, this Commission required the Railroad Company, without prejudice to its rights, to begin changing its system from 60 cycles per second to 100 cycles per second. This change will make the train stop system immune to the interference from the transmission and distribution lines of the Power Company.

The record shows that although both companies have constructed facilities that are generally in conformity with the standards of their industries, additional care must be exercised by one or both of them to safeguard the public. The Railroad Company's facilities were constructed pursuant to an order of, and are in conformance with the requirements of, the Interstate Commerce Commission. Out of 21 cases in which the Power Company constructed new facilities or changed existing facilities, increased voltage and the like, the Power Company obtained the authority of this Commission in 10 cases while in the remaining 11 cases no such authority was obtained.

It is clear that the foreign current found in the Railroad Company's automatic train stop system emanates from the paralleling power lines of the Power Company. The resultant interference with the Railroad Company's automatic train stop system creates a serious hazard to the operation of the Railroad Company's trains and consequently to the public. While the Power Company attempted to minimize the number of false signal indications received as a result of foreign current interference, it is clear from the testimony of men actually operating the trains that false signals are received on every trip but that they do not report all such incidents. In any event, it is the opinion of this Commission that even one such false signal indication which might result in a disastrous

collision or derailment is one too many. It is also clear that at the time the train stop system was installed foreign current of sufficient magnitude to be detected was not present in Railroad Company rails. The problem created by foreign current found in the Railroad Company's rails first evidenced itself in 1948 and it is the opinion of this Commission that it was due to the phenomenal growth in the loads carried, or the type of circuits employed, by the lines of the Power Company or both. As previously indicated, between 1924 and 1953 the Power Company's circuit miles of line had increased only 86.07% while the annual load carried by all of the Power Company lines (as evidenced by the increase in sales of kwh.) increased 1132.00%. By 1948 the annual load growth had increased over 1924 by approximately 740.00%. Since 1948 the annual load growth of the Power Company has continued to increase, at approximately twice the national average, and the interference problems of the Railroad Company have increased.

The opinion-evidence, tests and theories advanced to show whether the foreign current found in the rails of the Railroad Company was getting there by induction (through the air) or by conduction (through the earth) is extremely technical and, in part, highly theoretical. After a thorough analysis of the evidence, tests and theories, this Commission is of the opinion that for practical purposes it is not possible to state what percentage of foreign current found in the rails of the Railroad Company is from induction or conduction. It is the further opinion of this Commission, however, that if the Power Company kept currents from its lines parallel to and crossing the railroad, out of the earth, that the interference with the Railroad Company's automatic train stop system would cease in five of the seven affected areas. This appears to be conclusively illustrated by events which oc-

curred in the areas of Tolono, Hayes and Effingham. In the areas of Tolono and Hayes the Power Company owns and operates a 12.5 KV 4-wire transmission line which it alleged was a unigrounded line. The power line is located at varying distances from the railroad's main track, in some places ranging from approximately 93 feet to 450 feet. In spite of the fact that the line was alleged to be unigrounded, the Railroad Company was having an interference problem caused by foreign current which tests, made jointly by Power Company and Railroad Company engineers on July 2, 1953, showed was coming from the power line. Subsequent tests made by the Railroad Company with the field strength meter and the railammeter indicated the foreign current was reaching the rails primarily by conduction rather than induction. In the latter part of 1953, or early in 1954, the Power Company found some irregularities in this line in the nature of an unintentional ground or grounds. When the additional ground or grounds were removed and the line made a true unigrounded system, the interference with the Railroad Company's automatic train stop system disappeared. If the interference problem was caused primarily by induction in accordance with the theory of Power Company's witnesses, the interference problem created by lines so closely located to Railroad Company facilities would not be solved by the removal of the additional grounds which permitted currents to flow through the earth. In the Effingham area the Power Company owns and operates a 12.5 KV multigrounded distribution line and a 69 KV transmission line that does not use the earth for return currents, both of which are located on the same pole line. Joint tests on these lines showed that when the 12.5 KV line, which does permit current to get into the earth, was de-energized all foreign current in the Railroad Company's rails in the area disappeared although the 69 KV line, which does not use the earth for return currents, was left energized.

It is the further opinion of this Commission that the best engineering solution to the problem created by the escape of current from the transmission and distribution lines of the Power Company causing interference with the automatic train stop system of the Railroad Company is to convert the train stop system of the Railroad Company so that it will utilize 100 cycle per second current rather than 60 cycle per second current. Such a change will immunize the automatic train stop system to interference caused by the Power Company's current. It is the further opinion of this Commission that such a change requires the joint action of the Railroad Company and the Power Company to overcome the inductive and conductive effect of the Power Company's current on the Railroad Company's automatic train stop system. It is the further opinion of this Commission that such changes in the Railroad Company's automatic train stop system should be made at the joint costs of the Railroad Company and the Power Company and that said utilities should have a reasonable time within which to agree upon the apportionment or division of the cost of such changes which each should bear. It is the further opinion of this Commission that if at the expiration of such reasonable time said utilities shall have failed to file with the Commission a statement that an agreement has been made for the division or apportionment of the costs of such changes, this Commission should, after further hearing, make an order fixing the proportion of such cost which should be borne by each utility and the manner in which the same should be paid or secured.

VI.

Findings of Fact.

The Commission, having considered the complaint filed herein, the answer thereto and all of the evidence, both

oral and documentary, and being fully advised in the premises, is of the opinion and finds that:

1. The Commission has jurisdiction of the subject matter herein under consideration and the parties to this proceeding;

2. The Complainant Railroad Company and Respondent Power Company are public utilities within the meaning of and subject to the provisions of an act entitled "An Act concerning public utilities," as amended;

3. Complainant Railroad Company operates a system of lines of railroad and is engaged in the transportation of persons and property in interstate and intrastate commerce;

4. Respondent Power Company is engaged in the business of manufacturing, transmitting and distributing electrical energy within the State of Illinois;

5. Included in the Railroad Company's system of lines of railroad is a double track line built on privately owned right-of-way extending from Champaign, Illinois, to Branch Junction, Illinois, approximately 121.8 road miles in length;

6. The Railroad Company operates daily over the lines of railroad between Champaign and Branch Junction, Illinois, approximately 47 freight and passenger trains;

7. Said train movements over said lines of railroad of the Railroad Company are controlled by a 60 cycle continuous inductive automatic train stop system with cab signals installed in 1926 and operated pursuant to orders of the Interstate Commerce Commission in Docket No. I. C. C. 13413;

8. Said automatic train stop system utilizes the Railroad Company's track rails to carry the electric current necessary to operate both the track circuits and the train stop equipment on the engines. The track circuits are the controlling circuits and operate by direct current supplied by batteries kept in housings along the right-of-way. 60 cycle alternating current for the operation of the train stop and cab signals is superimposed upon the direct current track circuit and is controlled by the direct current relays;

9. Under normal operation the current from the train stop supply source feeds toward the locomotive, down one rail, past one pickup coil on the receiver, through the locomotive axle to the other rail, past the other pickup coil and thence back to the source of supply. Voltages thereby induced in the coils energize the electrical apparatus in the locomotive causing a green signal to be shown in the cab indicating the track ahead is clear of obstructions and is satisfactory for normal operation. If the track ahead is not free of obstructions or is unsatisfactory for normal operation, the 60 cycle current in the rails is removed so that the locomotive train stop equipment receives no energy resulting in a red cab signal;

10. The locomotive equipment on the Railroad Company's automatic train stop system utilizes both a so-called one channel and two channel type of pickup equipment. The one channel equipment is used on steam locomotives which, under normal operation, power freight trains only (at maximum speeds of from 50 to 60 miles per hour). The two channel type of equipment is used on Diesel locomotives which power the faster passenger trains (at maximum speeds of up to 100 miles per hour;

11. 600 milliamperes or more of 60 cycle foreign current in one rail with the other rail broken or with a defective bond will produce a false green signal on the one channel type of equipment;

12. 300 milliamperes or more of 60 cycle foreign current in each rail with a train ahead will produce a false green cab signal in the one channel type equipment if there is a broken rail, a defective bond or if the rear wheels of the last car of the train are spanning a staggered insulated joint;

13. Less than 300 milliamperes of 60 cycle foreign current will cause false red or flickering red cab signals in the two channel type of equipment;

14. It is not desirable from a safety standpoint to use two channel pickup equipment on the steam trains used in freight service due to the fact that said equipment is more susceptive to foreign current and reacts with a false red or flickering red signal which may cause an automatic application of the brakes;

15. On long freight trains such an automatic brake application may cause a slow moving train to buckle and derail with consequent hazard to train personnel and the public traveling on trains using adjacent tracks;

16. False green or proceed signals are extremely hazardous in that they permit the engineer operating the train to proceed into an area that might be occupied by another train or have some condition present that would normally call for the train to stop, such as a broken rail, broken bond (which may indicate an open joint), some foreign obstruction across the rails or a switch improperly aligned. False red or restrictive signals are also highly dangerous to the public in

that in some cases they cannot be controlled by the engineer fast enough to prevent an automatic brake application which brings the train to an immediate and sudden stop with a consequent risk of injury to passengers riding the train and, in addition, false red or restrictive signals have a tendency to cause the men operating the train to relax their vigilance in the presence of a red signal;

17. The Railroad Company's trains operating through this territory frequently pass each other on adjacent tracks and follow each other on the same track at intervals as short as ten minutes; if a train was stopped by a false red signal, it would be possible for a following train operating with a steam engine, to obtain a false green signal which might result in a rear end collision between the two trains which would block, damage and impair both tracks. Further a third train approaching on the adjacent track in the opposite direction with a steam engine, could, under these circumstances, obtain a false green signal allowing it to proceed into the area of the wreck at allowable speed;

18. Interference by foreign current with the Railroad Company's train stop system creates an imminent and continuing hazard which endangers the lives and property of members of the public making use of the common carrier service rendered by the Railroad as well as to its employees;

19. Said train stop system was constructed and has at all times been operated and maintained by the Railroad Company in conformity with orders of the Interstate Commerce Commission and good engineering practices;

20. The Power Company has constructed and maintains power lines for the transmission and distribution

of electrical energy which are in close proximity and parallel to or crossing the railroad right-of-way between Savoy, Illinois, and a point approximately two miles south of Effingham, Illinois, and between Mason, Illinois, and Alma, Illinois;

21. Current from said power lines of the Power Company is escaping from its premises to the premises of the Railroad Company and since 1948 had caused and continues to cause serious interference with the Railroad Company's automatic train stop system in the form of false signal indications of both a restrictive (red) and non-restrictive (green) character;

22. At the time the Railroad Company's automatic train stop system was installed a careful survey was made to determine if the then existing transmission and distribution lines of the Power Company would interfere with the automatic train stop system, the results of which showed there was no foreign current in any part of the area between Champaign and Branch Junction, Illinois, of sufficient magnitude to be detected;

23. Between 1926 and 1948 the Power Company constructed additional lines parallel to or crossing the right-of-way of the railroad, increased the loads carried on existing lines and changed the circuit design of existing lines, obtaining required authority from this Commission for some of the additions, extensions, or changes and failing to obtain required authority from this Commission for other of the additions, extensions or changes;

24. Between 1924 and 1948 the annual load growth on lines of the Power Company as evidenced by the total annual sales of kwh. increased 740.00%;

25. In 1948 the Railroad Company first experienced interference with its automatic train stop system as a result of foreign current;

26. Joint tests made by representatives of the Power Company and the Railroad Company conclusively show the foreign current found in the rails of the Railroad Company's automatic train stop system is primarily from parallelling or crossing transmission and distribution lines of the Power Company;

27. Between 1948 and 1953 the annual loads carried by the transmission and distribution lines of the Power Company, as evidenced by total annual kwh. sales increased an additional 392.00% or a total increase in 1953 over the year 1924 of 1132.00%;

28. During said period, 1948 to 1953, the interference with the Railroad Company's automatic train stop system as a result of foreign current continued to increase both in intensity and in area;

29. Additional tests which were made after the filing of this case again showed the foreign current was reaching the lines of the Railroad Company's automatic train stop system from paralleling and crossing transmission and distribution lines of the Power Company;

30. The Power Company could have minimized or avoided the effect of the escape of current from its lines by one or more of the following methods:

(a) building additional transmission or distribution lines away from the Railroad as the demand for power increased,

(b) confined its circuits to delta or uni-grounded type of construction.

(c) use of ungrounded multi-conductor cable,

(d) moving its lines away from the Railroad;

31. The Power Company may not transmit over its lines electric energy of such magnitude that it cannot be properly contained within reasonable limits of the transmission or distribution wires to the end that it interferes with public safety and security even though said Company employs circuit designs which are generally recognized and accepted in the industry and by his Commission;

32. The escape of current from the premises of the Power Company in quantities that will cause interference with the Railroad Company's automatic train stop system is due to causes entirely within the Power Company's control;

33. The automatic train stop system employed by the Railroad Company is in accordance with generally recognized methods, practices and standards for providing safe signal operations in the railroad industry and can be successfully and satisfactorily utilized in the absence of interference from foreign current;

34. There is no practicable way for immunizing the Railroad Company's 60 cycle automatic train stop system from foreign current caused by the Power Company's 60 cycle transmission and/or distribution lines which are of sufficient voltage, load and proximity to allow a portion of the transmitted energy to get into surrounding facilities either by induction, conduction, or a combination of the two;

35. The Railroad Company has attempted to overcome the effect of foreign current from the transmission and distribution lines of the Power Company by

all practicable and feasible methods, short of changing the basic automatic train stop system, such as:

(a) cleaning ballast and maintaining it in the best practicable condition,

(b) increasing normal train stop current in an attempt to override the foreign current interference, and

(c) increasing maintenance of the automatic train stop facilities:

36. The tests made by the Power Company to determine whether current from its lines was reaching the facilities of the Railroad Company by induction or conduction are of doubtful value for the reason that such tests are based in part upon highly questionable, theoretical assumptions. It is impossible in the light of present day electrical engineering knowledge to completely separate the inductive and conductive effects of a transmission or distribution line upon neighboring facilities. In five of the seven areas affected, if the Power Company kept all currents out of the earth, the operation of its transmission and distribution lines with their present loading would not cause interference with the Railroad Company's automatic train stop system as is conclusively shown by the operation of a 12.5 KV unigrounded transmission line in the areas of Hayes and Tolono, which line is in close proximity to the automatic train stop system of the Railroad Company; further conclusive proof of this fact is found in the Effingham, Illinois, tests in which a 12.5 KV multi-grounded line was de-energized with the result that all foreign current disappeared from the Railroad Company's rails in the area although a 69 KV line (which does not use the earth for

return currents) located on the same pole line was left energized;

37. The foreign current interference with the automatic train stop system of the Railroad Company is not caused by any fault or failure on the part of the Railroad Company and the Railroad Company has effected all measures with which it could reasonably be charged to eliminate such interference;

38. The transmission and distribution lines of the Power Company can be rebuilt to eliminate the possibility of any current in the earth but this would result in a less satisfactory system at a greater cost of operation. If the Railroad Company's automatic train stop system is operated at 100 cycles per second, it will be practically impervious to foreign 60 cycle current;

39. Although the evidence shows that the Power Company should be required to take steps to effect corrective measures on its facilities to eliminate the interference of foreign current from the transmission and distribution lines of the Power Company with the Railroad Company's train stop system, it is clear that the best engineering solution to the problem, i. e., the solution that would be used if both properties were under one management, is to change the train stop system of the Railroad Company so that it will operate on a frequency of 100 cycles per second on current supplied by the Power Company at such frequency instead of on a frequency of 60 cycles per second;

40. Public convenience and necessity and public safety require that joint action be taken by the Power Company and the Railroad Company to eliminate the interference of the Power Company's facilities with the operation of the Railroad Company's facilities; it

is further in the public interest that the solution adopted be the one which will provide the greatest safety in the most economical manner;

41. Public convenience and necessity, public security, public safety and the safety and security of the Railroad Company's train employees require that joint action be taken by the Power Company and the Railroad Company to eliminate the continuing hazard to the public and said employees caused by the interference of the Power Company's facilities with the operation of the Railroad Company's facilities. Such joint action should consist of the conversion of said automatic train stop system so that it will operate at a frequency of 100 cycles per second on current supplied by the Power Company at such frequency rather than at the present frequency of 60 cycles per second, thereby making it insensitive to any conceivable effect of the Power Company's transmission and distribution lines, said current to be metered to the Railroad Company on the 60 cycle side of said feed points. In effecting said joint action the Railroad Company should perform all the work done on its property in connection with the changeover of its engine and track facilities so that the automatic train stop system will thereafter operate at a frequency of 100 cycles per second and the Power Company should perform all work necessary so that it can furnish to the Railroad Company 100 cycle current at all reasonable, convenient and necessary points for the operation of said automatic train stop system;

42. The Power Company is engaged in the manufacture, transmission, distribution and sale of electrical energy and should be required to furnish 100 cycle energy to the Railroad Company and to main-

tain such 100 cycle energy in adequate quantities to operate a 100 cycle automatic train stop system on the railroad; said 100 cycle energy to be supplied by the Power Company between Champaign and Branch Junction, Illinois, at all reasonable, convenient and necessary locations for the proper and sufficient operation of such a 100 cycle automatic train stop system, said current to be metered to the Railroad Company on the 60 cycle side of said feed points; the expenses incurred in connection with the foregoing to be without prejudice to an agreement between the parties for a division or apportionment of costs, as hereinafter provided, and further without prejudice to a subsequent order by this Commission fixing the proportion of such cost or expense to be borne by each utility in the event they fail to agree upon a division or apportionment of costs;

43. The Railroad Company is engaged in operating a transportation system by rail and should be required to convert its automatic train stop track equipment between Champaign and Branch Junction, Illinois, and all locomotive equipment on locomotives operating thereover, so that said automatic train stop system will operate at a supplied frequency of 100 cycles per second; the expenses incurred in connection with the foregoing to be without prejudice to an agreement between the parties for a division or apportionment of costs, as hereinafter provided, and further without prejudice to a subsequent order by this Commission fixing the proportion of such cost or expense to be borne by each utility in the event they fail to agree upon a division or apportionment of costs. This finding is in accord with the Commission's interim order of March 9, 1954;

44. Such additions, extensions, repairs, improvements or changes to, or new structures erected in connection with said automatic train stop system and or facilities of the Power Company are necessary due to the influence of the transmission and distribution lines of the Power Company on the automatic train stop system of the Railroad Company and the susceptibility of the Railroad Company's automatic train stop system to the transmission and distribution lines of the Power Company and require the joint action of both the Railroad Company and the Power Company in the interests of public safety and security and accordingly should be made at the joint cost of said utilities; the joint work to be undertaken by the Power Company and by the Railroad Company should proceed as expeditiously as possible and should be completed not later than January 1, 1955;

45. The Railroad Company and the Power Company should have a reasonable time within which to agree upon an apportionment or division of costs which each shall bear of said additions, extensions, repairs, improvements or changes to, or new structures erected in connection with said automatic train stop system and or facilities of the Power Company which the Commission finds to be thirty (30) days from the date of this order;

46. If, at the expiration of such time, said public utilities shall fail to file with the Commission a statement that an agreement has been made for the division or apportionment of the costs or expense of such additions, extensions, repairs, improvements or changes to, or new structures erected in connection with said automatic train stop system and or facilities of the Power Company, the Commission should after

further hearing, by further order, fix the proportion of such cost or expense to be borne by each utility and the manner in which the same should be paid or secured;

47. The statements of the Commission in the opinion constituting part of this order are adopted as, and shall be construed to be, findings of fact.

VII.

Ordering Paragraphs.

It Is Therefore Ordered by the Illinois Commerce Commission that the Railroad Company and the Power Company shall eliminate the continuing hazard to the public and the employees of the Railroad Company which is caused by the interference of the Power Company's facilities with the operation of the Railroad Company's facilities. Such joint action shall consist of the conversion of said automatic train stop system so that it will operate at a frequency of 100 cycles per second on current supplied by the Power Company at such frequency rather than at the present frequency of 60 cycles per second, thereby making it insensitive to any conceivable effect of the Power Company's transmission and distribution lines. In effecting said joint action the Railroad Company shall perform all the work done in its property in connection with the changeover of its engine and track facilities so that the automatic train stop system will thereafter operate at a frequency of 100 cycles per second and the Power Company, shall perform all work necessary so that it can furnish to the Railroad Company 100 cycle current for the operation of said automatic train stop system at all reasonable, convenient and necessary points, such current to be metered to the railroad on the 60 cycle side of such

feed points; the expenses incurred in connection with the foregoing shall be without prejudice to either of the parties insofar as they may agree between themselves as to a division or apportionment of costs, as hereinafter provided, and shall further be without prejudice to either of the parties insofar as a subsequent order of this Commission may fix the apportionment of such cost or expense to be borne by each utility in the event they fail to agree upon a division or apportionment of costs.

It Is Further Ordered that the joint work to be undertaken by the Power Company and the Railroad Company shall be made at the joint cost of said public utilities and shall proceed as expeditiously as possible and shall be completed not later than January 1, 1955.

It Is Further Ordered that the Railroad Company and the Power Company shall have thirty (30) days from date of this order within which to agree upon the apportionment or division of costs of converting the automatic train stop system so that it will operate on a current of 100 cycles per second instead of 60 cycles per second and changing the facilities of the Power Company to supply such current to the Railroad Company at a frequency of 100 cycles per second and at the expiration of such time said public utilities shall file with this Commission a statement that an agreement has been made for a division or apportionment of the costs, setting forth said division or apportionment, or shall file a statement that they are unable to agree upon a division or apportionment of such costs;

It Is Further Ordered that if said public utilities shall within thirty (30) days from the date of this order file a statement that they are unable to agree upon a division or apportionment of said costs, this Commission hold a

further hearing to make an order fixing the proportion of such cost or expense to be borne by each public utility and the manner in which the same shall be paid or secured.

It Is Further Ordered that this Commission hereby retains jurisdiction of this subject matter herein under consideration and of the parties to this proceeding for the purpose of entering any such further order or orders as the Commission in its judgment may deem meet.

By order of the Commission at Chicago, Illinois, this 26th day of October, A. D. 1954.

APPENDIX "G".

Order of Illinois Commerce Commission of March 8, 1955.

FINAL ORDER.

By the Commission:

On October 26, 1954, an order was entered in this proceeding which provided, among other things, that the Illinois Central Railroad Company and the Central Illinois Public Service Company should have thirty (30) days from the date of said order within which to agree upon an apportionment or division of costs of converting the automatic train stop system of the Railroad Company so that it will operate on a current of 100 cycles per second instead of 60 cycles per second and directing that the Power Company supply current to the Railroad Company at a frequency of 100 cycles per second instead of at 60 cycles per second. At the expiration of such time said utilities were to file with the Commission a statement that an agreement for a division or apportionment had been made or that they were unable to agree upon a division or apportionment of such costs. Within the thirty (30) day period the Commission was advised that said utilities were unable to agree upon a division or apportionment of costs and accordingly further hearings were held in this matter on December 20th and 21st, 1954, pursuant to the provisions of Section 50 of the Public Utilities Act and the order of this Commission dated October 26, 1954, the purpose of said hearing being to show what proportion of the costs or expense of the aforesaid changes should be borne by each public utility.

At said hearing both utilities appeared, were represented by counsel and reaffirmed that said utilities were unable

to agree upon a division or apportionment of costs. Only the Illinois Central Railroad Company introduced evidence as to an equitable division of the costs. It further appeared from the evidence taken at said hearing that the Illinois Central Railroad Company had proceeded and was proceeding with the installation of that portion of the work which the Commission required it to do in the Commission's order of October 26, 1954, and that none of the work which the Commission required the Central Illinois Public Service Company to do by the Commission's order of October 26, 1954, had been done or was in the process of being done.

The Commission, having considered all of the evidence, both oral and documentary, and being fully advised in the premises, is of the opinion and finds that:

(1) The Commission has jurisdiction of the subject matter herein under consideration and the parties to this proceeding;

(2) The Illinois Central Railroad Company and the Central Illinois Public Service Company are public utilities within the meaning of and subject to the provisions of an Act entitled "An Act concerning public utilities," as amended;

(3) Said Railroad Company and said Power Company are unable to agree as to an equitable apportionment or division of costs of converting the automatic train stop system of the Railroad Company so that it will operate on a current of 100 cycles per second and the providing of facilities by the Power Company so that it can supply current to the Railroad Company at 100 cycles per second;

(4) The estimated cost of performing the work contemplated by the Commission's order of October 26, 1954, is $147,347.00, consisting of the following:

(a) Equipment for converting 60 cycle current to 100 cycle current	$ 18,290.00
(b) Concrete buildings to house conversion and switching equipment	4,867.00
(c) Switch equipment for 100 cycle current	19,771.00
(d) Telephones	800.00
(e) Rectifiers to operate on 100 cycle current	2,139.00
(f) Instruments to test 100 cycle equipment on locomotives	26,800.00
(g) Locomotive equipment	48,360.00
(h) New commercial power taps	5,592.00
(i) Cost of operating, maintaining and perpetuating additional equipment necessary to supply and utilize 100 cycle current instead of 60 cycle	30,528.00
	$147,347.00

(5) As the Illinois Central Railroad Company has proceeded and is proceeding with the portion of the work which it was contemplated the railroad would do under the Commission's order of October 26, 1954, and as none of the work which it was contemplated would be done by the Central Illinois Public Service Company by the Commission's order of October 26, 1954, has been done or is in the process of being done and as it is in the public interest that the conversion of said automatic train stop system be accomplished at the earliest possible date, it is now reasonable to require the Illinois Central Railroad Company to perform all of the work necessary to convert its sys-

tem so that it will operate at a frequency of 100 cycles per second with current being supplied by the power company at 60 cycles per second;

(6) As the conversion of the automatic train stop system of the Illinois Central Railroad Company is made necessary partially by the conductive and inductive interference with said train stop system by the transmission and distribution lines of the Central Illinois Public Service Company and partially by the susceptiveness of said Railroad Company's train stop system to interference from said transmission and distribution lines of said power company, it is reasonable that each of said utilities should bear 50% of the cost of said conversion;

(7) The recitals of fact and findings of fact contained in the Commission's order of October 26, 1954, are hereby adopted as and shall be construed to be findings of fact and bases for the division or apportionment of costs herein.

It Is Therefore Ordered by the Illinois Commerce Commission that the Illinois Central Railroad Company shall proceed immediately to complete the conversion of its automatic train stop system so that it will operate at a frequency of 100 cycles per second instead of at 60 cycles per second.

It Is Further Ordered that the Illinois Central Railroad Company shall complete the said conversion of its automatic train stop system on or before December 31, 1955.

It Is Further Ordered that the Illinois Central Railroad Company and the Central Illinois Public Service Company shall each bear 50% of the actual cost of said con-

version; the total cost of conversion is estimated to be $147,347.00 as more particularly set forth in finding (4) above.

It Is Further Ordered that the Commission hereby retains jurisdiction of the subject matter herein under consideration and of the parties to this proceeding for the purpose of entering any such further order or orders as the Commission in its judgment may deem meet.

By order of the Commission at Springfield, Illinois, this 8th day of March, A. D. 1955.

APPENDIX "H."

Section 26 of the Interstate Commerce Act as enacted February 28, 1920.

(41 Stat. at L. 498.)

The Commission may, after investigation, order any carrier by railroad subject to this Act, within a time specified in the order, to install automatic train-stop, or train-control devices or other safety devices, which comply with specifications and requirements prescribed by the Commission, upon the whole or any part of its railroad, such order to be issued and published at least two years before the date specified for its fulfillment: Provided, that a carrier shall not be held to be negligent because of its failure to install such devices upon a portion of its railroad not included in the order; and any action arising because of an accident happening upon such portion of its railroad shall be determined without consideration of the use of such devices upon another portion of its railroad. Any common carrier which refuses or neglects to comply with any order of the Commission made under the authority conferred by this section shall be liable to a penalty of $100 for each day that such refusal or neglect continues, which shall accrue to the United States, and may be recovered in a civil action brought by the United States.

APPENDIX "I."

Section 26 of the Interstate Commerce Act as in force since August 26, 1937 (renumbered Section 25 by Act of September 18, 1940) 49 U. S. C., § 26.

The term "carrier" as used in this section includes any carrier by railroad subject to this chapter (including any terminal or station company), and any receiver or any other individual or body, judicial or otherwise, when in the possession of the business of a carrier subject to this section: Provided, however, that the term "carrier" shall not include any street, interurban, or suburban electric railway unless such railway is operated as a part of a general steam-railroad system of transportation, but shall not exclude any part of a general steam-railroad system of transportation now or hereafter operated by any other motive power.

(b) The Commission may, after investigation, if found necessary in the public interest, order any carrier within a time specified in the order, to install the block signal system, interlocking, automatic train stop, train control, and/or cab-signal devices, and/or other similar appliances, methods, and systems intended to promote the safety of railroad operation, which comply with specifications and requirements prescribed by the Commission, upon the whole or any part of its railroad, such order to be issued and published a reasonable time (as determined by the Commission) in advance of the date for its fulfillment: Provided, that block signal systems, interlocking, automatic train stop, train control, and cab-signal devices in use on August 26, 1937, or such systems or devices hereinafter installed may not be discontinued or materially modified by carriers without the approval of the Commission: Provided further, that a carrier shall not be

held to be negligent because of its failure to install such systems, devices, appliances, or methods upon a portion of its railroad not included in the order, and any action arising because of an accident occurring upon such portion of its railroad shall be determined without consideration of the use of such systems, devices, appliances, or methods upon another portion of its railroad.

(e) Each carrier by railroad shall file with the Commission its rules, standards and instructions for the installation, inspection, maintenance and repair of the systems, devices and appliances covered by this section within six months after August 26, 1937, and, after approval by the Commission, such rules, standards and instructions, with such modifications as the Commission may require, shall become obligatory upon the carrier: Provided, however, that if any such carrier shall fail to file its rules, standards and instructions the Commission shall prepare rules, standards and instructions for the installation, inspection, maintenance and repair of such systems, devices and appliances to be observed by such carrier, which rules, standards and instructions, a copy thereof having been served on the president, chief operating officer, trustee or receiver of such carrier, shall be obligatory: Provided further, that such carrier may from time to time change the rules, standards and instructions herein provided for, but such change shall not take effect and the new rules, standards and instructions be enforced until they shall have been filed with and approved by the Commission: And provided further, that the Commission may on its own motion, upon good cause shown, revise, amend or modify the rules, standards and instructions prescribed by it under this subsection, and as revised, amended or modified they shall be obligatory upon the carrier after a copy thereof shall have been served as above provided.

(d) The Commission is authorized to inspect and test any systems, devices and appliances referred to in this section used by any such carrier and to determine whether such systems, devices and appliances are in proper condition to operate and provide adequate safety. For these purposes the Commission is authorized to employ persons familiar with the subject. Such persons shall be in the classified service and shall be appointed after competitive examination according to the law and the rules of the Civil Service Commission governing the classified service. No person interested, either directly or indirectly, in any patented article required to be used on or in connection with any of such systems, devices and appliances or who has any financial interest in any carrier or in any concern dealing in railway supplies shall be used for such purpose.

(e) It shall be unlawful for any carrier to use or permit to be used on its line any system, device or appliance covered by this section unless such apparatus, with its controlling and operating appurtenances, is in proper condition and safe to operate in the service to which it is put, so that the same may be used without unnecessary peril to life and limb, and unless such apparatus, with its controlling and operating appurtenances, has been inspected from time to time in accordance with the provisions of this section and is able to meet the requirements of such test or tests as may be prescribed in the rules and regulations provided for in this section.

(f) Each carrier shall report to the Commission in such manner and to such extent as may be required by the Commission, failures of such systems, devices or appliances to indicate or function as intended; and in case of accident resulting from failure of any such system, device or appliance to indicate or function as intended, and resulting in injury to person or property which is reportable under

the rules of the Commission, a statement forthwith must be made in writing of the fact of such accident by the carrier owning or maintaining such system, device, or appliance to the Commission; whereupon the facts concerning such accident shall be subject to investigation as provided in sections 40-42 of Title 45.

(g) It shall be the duty of the Commission to see that the requirements of this section and the orders, rules, regulations, standards and instructions made, prescribed or approved hereunder are observed by carriers, and all powers granted prior to August 26, 1937, to the Commission are extended to it in the execution of this section.

(h) Any carrier which violates any provision of this section, or which fails to comply with any of the orders, rules, regulations, standards or instructions made, prescribed or approved hereunder shall be liable to a penalty of $100 for each such violation and $100 for each and every day such violation, refusal or neglect continues, to be recovered in a suit or suits to be brought by the United States attorney in the District Court of the United States having jurisdiction in the locality where such violations shall have been committed. It shall be the duty of such attorneys to bring such suits upon duly verified information being lodged with them showing such violations having occurred; and it shall be the duty of the Commission to lodge with the proper United States attorneys information of any violations of this section coming to its knowledge.